



## راهنمای فنی محصولات



سیستم عملگرهای خطی برای استفاده در انواع  
تخت های بیمارستانی صندلی های دندانپزشکی  
تجهیزات توانبخشی و مبلمان اداری و منزل



# Linear Actuator Systems For furniture, Rehabilitation and Medical equipment

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# LINKAN<sup>®</sup>





## ***LINKAN Product Back Up***

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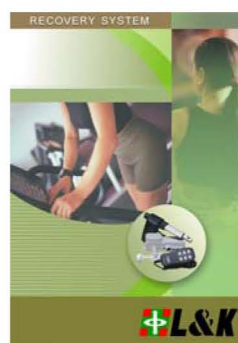
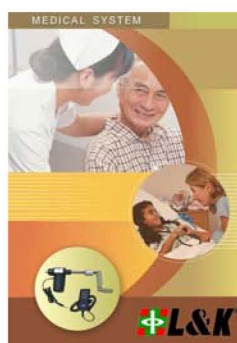


## تاریخچه شرکت لینکان

شرکت لینکان در سال ۱۹۹۰ فعالیت خود را با هدف مکانیزه کردن تخت های بیمارستانی در تایوان آغاز نمود و به مدت ۱۰ سال از محصولات اروپایی در این امور استفاده نمود. در سال ۲۰۰۰ این شرکت اولین محصولات تولیدی خود را به بازار عرضه نمود و با توجه به کیفیت مناسب مورد توجه تولید کنندگان تخت های بیمارستانی در شرق آسیا قرار گرفت. واحد تحقیقات لینکان نیز به طور پیوسته به گسترش محصولات و بهبود کیفیت محصولات خود اهتمام ورزیده و در حال حاضر این شرکت رنج کاملی از محصولات را برای اتوماسیون انواع تخت های بیمارستانی، صندلی های دندانپزشکی، مبلمان منزل، تجهیزات توانبخشی و تجهیزات ورزشی را تولید می نماید.

برخی از سوابق برجسته Linkan به شرح ذیل می باشد :

- ۲۰۰۱- تجهیزات مربوط به تخت خواب های بستری و صندلی دندانپزشکی
- ۲۰۰۲- عرضه تجهیزات مربوط به صندلی های آرایشگاه، تخت خواب های خانگی و میز چشم پزشکی
- ۲۰۰۳- تجهیزات تخت ICU
- ۲۰۰۴- تجهیزات مربوط به برقی نمودن تخت های با هندل دستی
- ۲۰۰۵- عرضه ستون های بالا برنده مخصوص تخت جراحی و صندلی معاینه مامایی
- ۲۰۰۶- عرضه عملگر های جدید سری LA32، کنترل نرسینگ و SLS
- ۲۰۰۷- عرضه کنترل باکسهای سری CB06 و CB09
- ۲۰۰۸- عرضه عملگر های مدل LA39 و ستون های بالا برنده سری LA38
- ۲۰۰۹- راه اندازی کارخانه جدید Linkan با ظرفیت چند برابر در تایچونگ تایوان



## شبکه فروش و تضمین کیفیت:

شرکت لینکان از ابتدا با تاکید بر کرامت مشتری و حقوق او نسبت به گسترش شبکه فروش و خدمات خود در اقصی نقاط جهان اقدام نموده و در حال حاضر محصولات و خدمات Linkan توسط شبکه فروش و نمایندگی های محصولات این شرکت در کشورهای ژاپن، اندونزی، هند، ایران، کره، مالزی، فیلیپین، انگلیس، فرانسه، ایتالیا، برزیل، مصر، سوریه، تایلند و ترکیه و ... عرضه می شود.

**شرکت مهندسی فراسیس** از سال ۱۳۸۳ به عنوان نماینده انحصاری این شرکت در ایران فعالیت نموده و افتخار دارد که با بزرگترین تولید کنندگان تخت های بیمارستانی در ایران همکاری می نماید.

این شرکت محصولات لینکان را با ضمانت ۳۰ ماهه به مشتریان خود عرضه نموده و واحد خدمات پس از فروش محصولات لینکان آماده ارائه خدمات به مشتریان محترم می باشد.

## LINKAN A/C TECHNICAL SUPPORT MANUAL

This manual consists of the detailed description for general/optional features of all LINKAN A/C products. Through these, the obtained knowledge will help to choose the suitable type of LINKAN A/C products.

The contents are classified as follows:

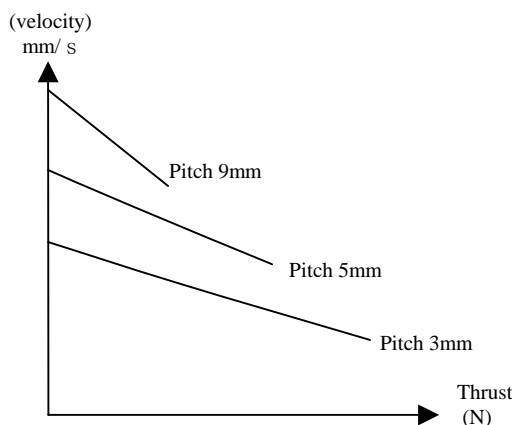
1. Actuator
2. Control Box
3. Controller
4. Others

### 1. Actuator:

#### 1.1. Screw Types

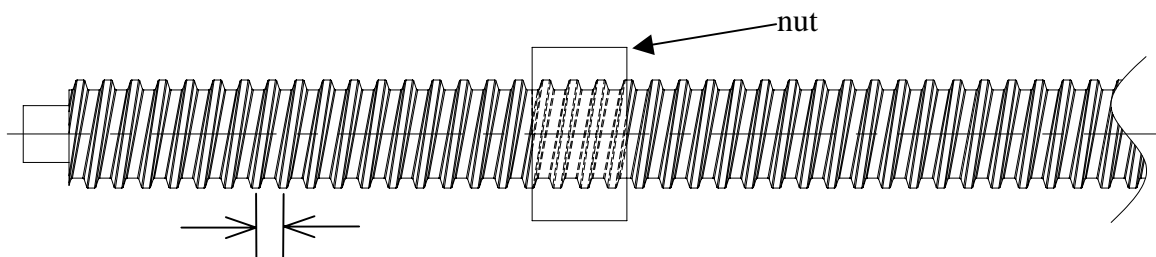
LINKAN A/C uses Acme thread spindle. LINKAN A/C actuator is a device to convert rotation motion into linear movement. The spindle specification will affect stroke, installation, thrust, speed, and self-lock force of actuator.

For a given kind of product series such as LA33, different pitches are available. The bigger the pitch, the smaller the thrust. Please refer to the following:



Because the length of nut is fixed, as the pitch value increases, the contact surface of thread in the nut decreases. To obtain enough contact surfaces for enough thrust, it requires more parallel threads on spindle. The type of LINKAN A/C pitch and thread is listed as below:

Type	Pitch	No. of Thread
LApp.3	3mm/rev.	Single thread
LApp.4	4mm/rev.	Double thread
LApp.5	5mm/rev.	Double thread
LApp.9	9mm/rev.	Triple thread



Pitch = the distance of nut rotation as spindle runs one cycle

## 1.2. Self-lock Force

Self-locking force is the supporting force of actuator. The bigger the pitch, the smaller the self-locking force. When the load is bigger than supporting force, the actuator will retract.

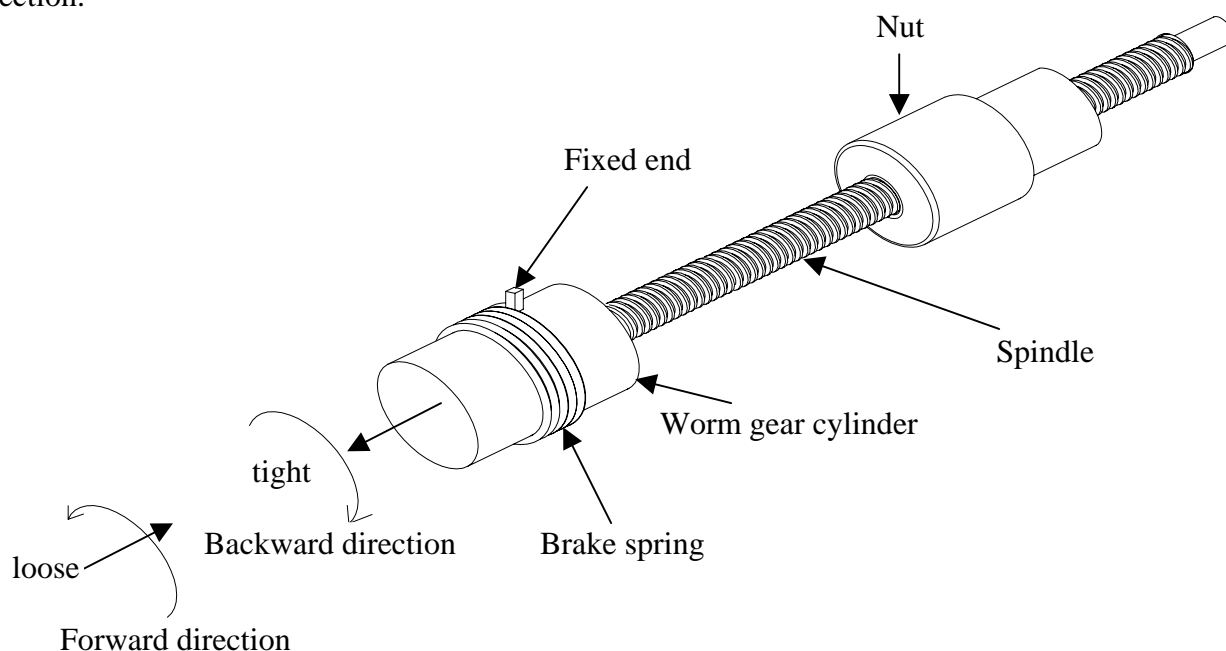
To enhance self-locking force, the brake option must be chosen (only available in LA31, LA32 series). By connecting to LINKAN A/C control box, the higher self-locking force can be obtained because the control box will connect actuator plugs and form closed circuit when actuator is not operating.

## 1.3. Brake System

When the pitch is big, the self-locking force of actuator is relatively small. To increase the self-locking force, "Brake" option can be ordered.

Currently, brake is only available in LA31, LA32 series. This brake system consists of brake spring covering a worm gear cylinder. One end of spring is fixed and the other end is free. As worm gear rotates in the reverse direction, brake spring is retracted to squeeze cylinder as brake action. When the worm gear rotates normally, the spring will be released and the worm gear cylinder rotates freely. The illustration is as (Pict. 1) :

Therefore, brake system is directional while using. When it applies, it can only be adapted to 'Push' direction.



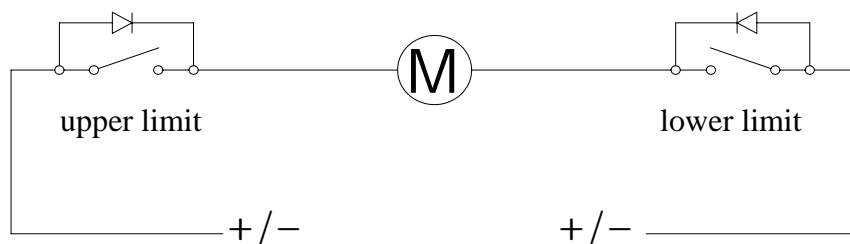
(Pict. 1)

## 1.4. End Stop Principles

LINKAN A/C actuators are constructed with 3 end stop principles. The following is the details:

### (1) Limit Switch –

This is used with 2 built-in limit switches to disconnect the power to the motor. The limit switch is for the upper limit and lower limit of actuator respectively.



Actuator applied with this principle: LA31, LA32, LA33, LA34



## (2) Electronic Overload Protection –

As the nut approaches the limit, the current of motor will rapidly increase. Thus, the control box connected to the working actuator must be able to detect and cut off the current.

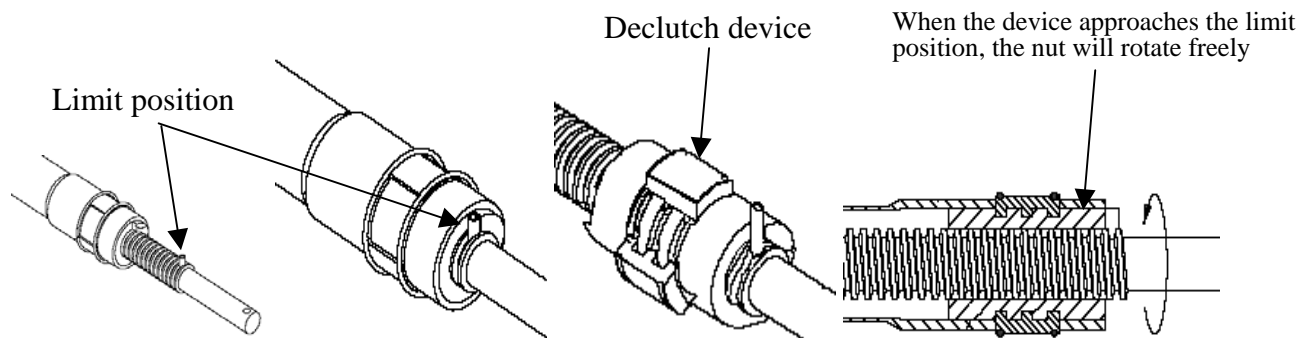
Thus, under this principle, as the load exceeds the setting value, the control box will be short circuit to stop the movement.

Control box with this feature: CB09, CB12, CB16, CB22.

Actuator required this feature: LA36 (necessary with CB12)

## (3) Mechanical Overload Protection

When nut moves to end position, nut will rotate freely to achieve the required function. The illustration is as the below:

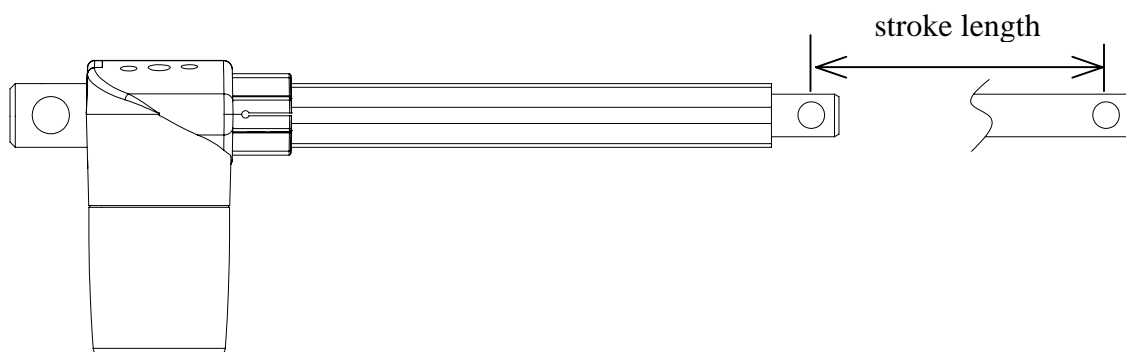


Actuator with this feature: LA37.

## 1.5. Stroke Length and Installation Dimension

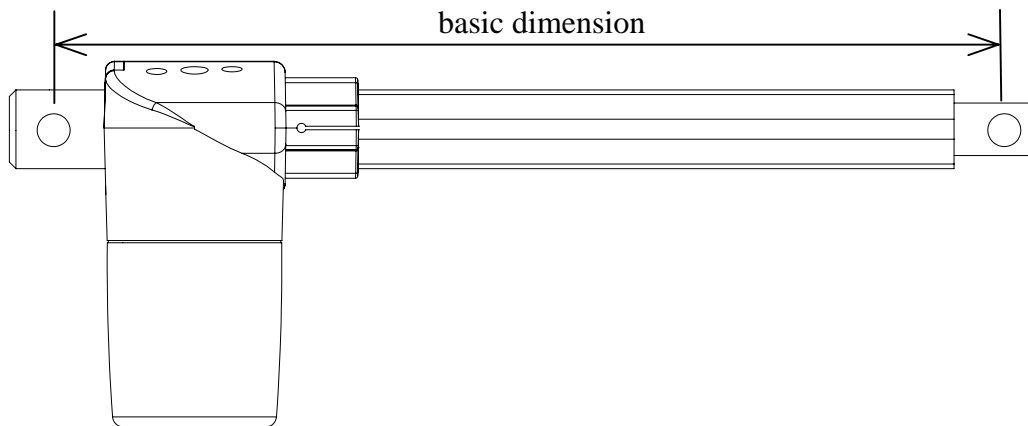
Stroke Length:

The extending distance of piston in the actuator.



## Installation dimension:

The distance between the piston rod eyes and back fixture of the actuator.



From above, it shows that the installation dimension will change upon the stroke.

Thus, it follows the rules:

The smallest installation dimension = basic dimension + stroke length

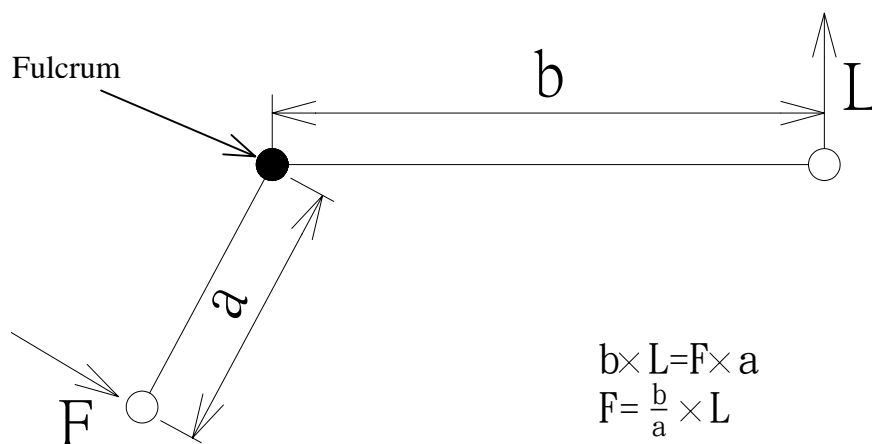
Example: LA33.3N-20-200-RHS

The smallest installation dimension = 173 + 200 = 373mm

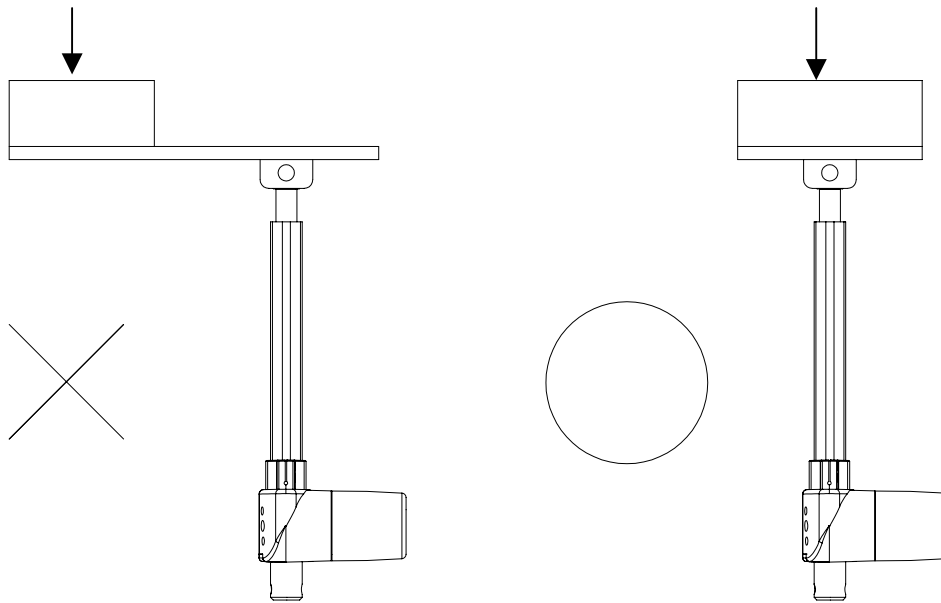
## 1.6. Thrust

The thrust of LINKAN A/C actuator ranges from 1500N to 6000N. Thrust is the first consideration for choosing right actuator and control box.

Required thrust(F) is upon the load to lift. Besides the weight(L) of the load, the further consideration should include the geometry of mechanism: The illustration is as follows:



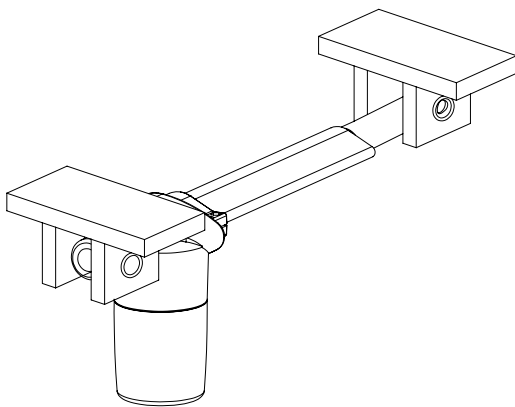
Another important point is the installation position of actuator. Actuator cannot suffer too much lateral force. Otherwise actuator will be damaged.



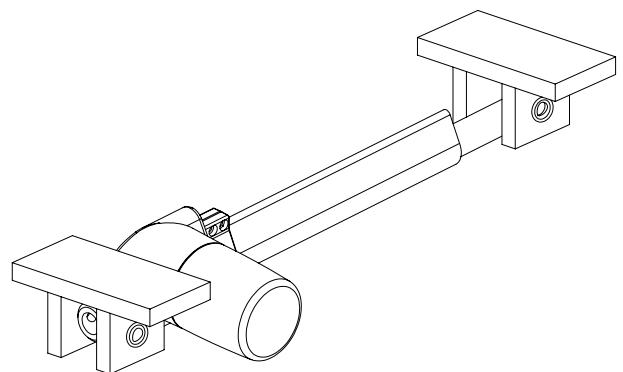
### 1.7. Back Fixture

LINKAN A/C offers 2 types of back fixture as follows:

V Type (vertical installation)



H Type (horizontal installation)



### 1.8. Quick Release

Currently, Quick Release is only available in LINKAN LA31 and LA32 series.

The quick release function is for the backrest position of hospital bed. In case of emergency, for example, patients need CPR therapy due to heart exhaustion, it will require lowering down quickly the backrest to horizontal position. For installation and other points, please refer to LA31.Q, LA32.Q installation.



## 1.9. Reed Switch

Currently, Reed Switch is only available in LINKAN A/C LA31, LA32 actuator series.

Reed Switch is a switch activated by magnetic field and placed on the plastic cover over the worm wheel gear. In worm wheel gear, there is an 8-pole magnetic disc. As the worm wheel gear rotates one cycle, Reed Switch will send out 8 signals (pulses). Thus, the software in the control box can facilitate this signal to design control program.

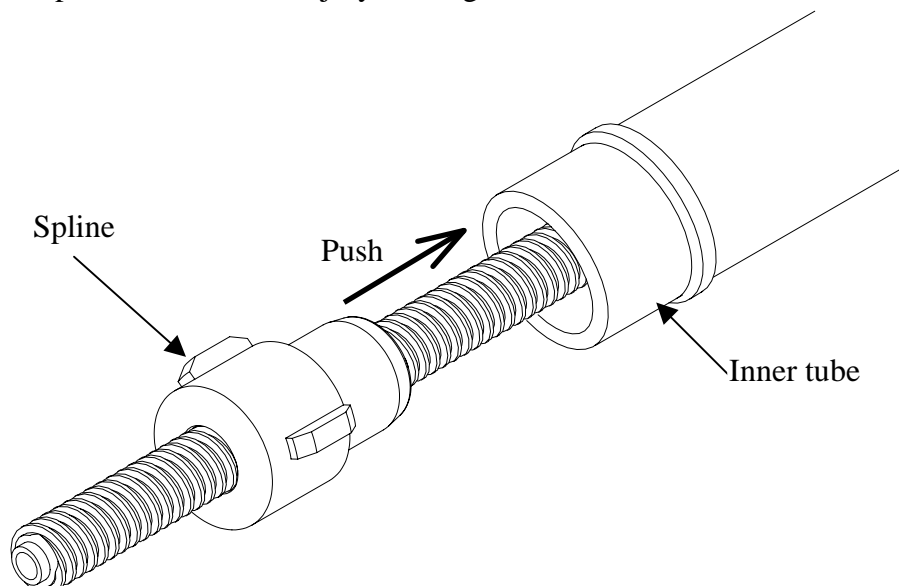
## 1.10. Safety Nut

LINKAN A/C actuator can equip with a safety nut, which is an auxiliary nut. In normal condition, it will move along with main nut. When main nut breaks down, safety nut will support the load. Actuator can be further activated but this movement is only limited to lower the load. In this condition, it also indicates repairing needed.

Currently, this feature is available in LA31, LA32, and LA33 series.

## 1.11. Spline Function

Actuator with this feature can be only applied in 'push' application. It is not allowed to be used in 'pull' application. When piston is retracting, this is a device for safety. For example, when this function is applied in backrest position of bed and if something is blocked in the motion structures, the spline function can prevent the risk of injury or danger.



Spline function is only for applications of light load 2000N. If the load is too heavy and when the block stuff makes the spline declutched, the danger of rapid lowering may occurs after the block stuff is removed.

Currently, only LA33 is available with this feature.

## 1.12. Duty Cycle

Electronic components are vulnerable to high temperature.

As the actuator is operating, the inner temperature will increase. This temperature rise occurs in the coils of motor. The rising level of temperature is upon the load. If the operation continues, the heat will damage the insulation of motor thus the motor breaks down. From this aspect, the extent of continuous movement under heavy load is limited.

It is important to comply with the duty cycle indicated on the actuator or control box. If the operation exceeds the duty cycle, the actuator will be overheated and possibly damaged. Unless any particular note in the label, duty cycle under continuous use is max 10% or 18-minute halted time after 2-minute continuous use.

## 2. Control Box

### 2.1. Earth Connection

LINKAN A/C control box offer 2 choices – general insulation and earth connection protection.

General insulation is double insulated, no earth connecting devices. The main applied field is not medical one because it cannot provide additional protection against electrical shock of high-risk voltage.

Earth connection has an earth-connecting device, which can double insulate the transformer through bed frame to be connected to the ground via mains power cable. The inner components in the control box have no actual earth connecting. At this moment, the earth connection feature is only available for CB09, CB12, CB16 and CB22.

Earth connection has 2 main fuses, one is in input and the other is in neutral. The earth connection has the follow advantages:

- Increase the level of electrical static discharge (ESD) immunity. (Provided that mains power cable is connected to power supply)
- When the bed frame of application is connected to the ground, it will usually decrease the electrical-magnetic field for applications.

Earth connection is mainly applied or required in medical applications. Because the application is connected to earth, it will offer more protection from electric shock.

Some places require earth connection to prevent from electrical static discharge and electrical magnetic compatibility (EMC). Thus, metal bed frame, power cable/actuator placement need to match each other and to achieve the performance. However, for different environments and different requirements in different countries, the considering factors are different. Currently, there is no common standard. For any further information, please contact LINKAN A/C technical department.

### 2.2. Duty Cycle

The coils of transformer in LINKAN A/C control box will raise the temperature when there is continuous operation under loads. If the duty cycle is exceeded, control box will encounter the risk of overheat and damage.

Unless there is particular note in the label, under continuous operation, the max. duty cycle is 10% or 18-minute halted time after 2-minute continuous use.

### 2.3. Transformer

Currently, LINKAN A/C control boxes apply 2 different transformers. One is EI-core type (such as the one in CB02) and the other is toroidal (such as the one in CB05, CB06, CB09, CB12, CB16, CB22 and CB24).

The advantages and disadvantages between these 2 types:

EI-core type –

Advantages: small dimension and cheaper

Disadvantages: Lower efficiency

Toroidal type –

Advantages: better efficiency

Disadvantages: bigger dimension and more expensive.

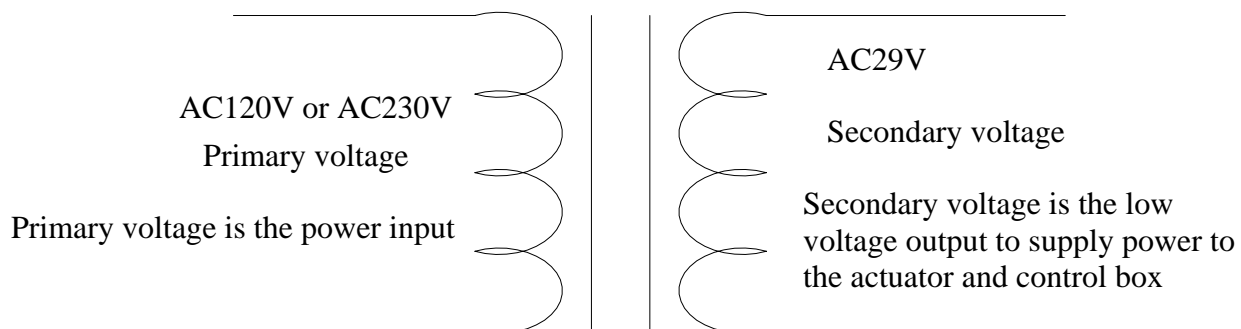
### Transformer v.s. the speed of actuator

The secondary voltage from a transformer will decrease when the current consumption occurs. The bigger the current consumption is, the lower the voltage is. Thus, the speed of actuator will relatively decrease.

The degree of voltage drop is upon the capacity of transformer. Under the same load, the decreasing level of bigger transformer is less than that of smaller transformer. Under given condition, toroidal type has smaller drop level than EI type does.

Some control boxes such as CB12, CB16, CB22 and CB24 are available with Turbo function. This is to supply higher voltage under heavy load thus the speed will not drop. Besides, higher speed can finish the operation faster and prevent actuator or control box from overheating.

### \* Transformer \*



## 2.4. Electronic Overload Protection

Electronic Overload Protection in LINKAN A/C control box can be classified into the following 2 types:

- A: Current cut-off (such as CB09, CB12, CB16, CB22 and CB24)
- B: Pulse (speed) monitoring (such as CB05)

### A.: Current cut-off

Actuator requires higher current when the load becomes heavier. Thus, in this design, there is a detecting circuit to check at any time the current supplied from control box to actuator. As the current reaches the setting value such as 4.5A, the protective circuit is activated and cutting off current to the actuator.

When actuator reaches 2 end-stop positions, actuator current will rapidly increase. Then, the protective circuit will quickly cut off current to actuator and stop the movement.

### B: Pulse (speed) monitoring

This feature is similar to current cut-off but not so fast. Actuator needs to be equipped with end stop switch and reed switch such as LA31.4BR-15-200-BHD (LA32.4BR-15-200-BHD). This design facilitates the pulse sent back by actuator's reed switch to judge the movement speed and whether it reaches limit. Then, if it is, the current supply will be cut off.



## 2.5. Wake-up Feature

LINKAN A/C control box CB22 and CB24 is available with wake-up feature. This control box will cut off the power and enter 'sleeping' status when the user does not operate controller for some time. This can achieve the energy-saving purpose and prevent running out battery power when no connection to mains power. When it requires operation, the system can be activated (wake up) by handset control.

## 2.6 Turbo Function

LINKAN A/C control box (CB12, CB16, CB22 and CB24) is available with turbo function. It is to increase the speed of actuator when current consumption is lower than a certain level (approx. 1.8A). Under this condition, the secondary voltage will be switched from low voltage (AC22V) to high voltage (AC29V).

Another type is TR05+CB05, a permanent high voltage at AC29V for the higher speed.

## 2.7 Battery

LINKAN A/C use rechargeable lead-acid battery, which comprises 2 pcs of DC12V/1.2Ah batteries. In normal condition, the battery life is approx. 2 years. Charging times can be also expressed as the life of battery:

If the battery capacity is about 100% ↔ 70%, the chargeable cycle is about 1200 times.

If the battery capacity is about 100% ↔ 50%, the chargeable cycle is about 400 times.

If the battery capacity is about 100% ↔ 0%, the chargeable cycle is 180 times.

Note :

A : It is advised to use battery electricity as little as possible and to charge the battery as frequently as possible. Battery will have the longest life in this way.

B : Because of self-discharge, it cannot expect that battery is under the saturated status when customers receive batteries. It is advised that when customers receive the battery, the battery can be immediately recharged. Another condition is to charge the battery within 5 months counted from production date. The earlier the battery being charged, the longer the life being extending. The charging time for above condition should be maintained between 24-48 hours.

C : Recharging current:

Typical principle : Max. charging current = 0.25 x battery capacity (Ah)

$$BA16 = 0.25 \times 1.2 \text{ Ah} = 0.3\text{A}$$

D : Charging voltage :

DC 24V system = The max. DC 27.6V.

E : Charging time :

BA16 charging time is about  $1.2\text{Ah} \div 0.3 = \text{approx. } 4\sim 5 \text{ hrs.}$   
Theoretically, it needs 4~5 hrs to charge the battery capacity from 0% to 80%. For 100% capacity, it will need at least 10 hrs.

The battery alarm in the control box will be activated when the capacity is lower down to 18V. To optimize battery life, it is better to charge battery before alarm is activated

Therefore, it is advised that our customers can have the control box plugged to the mains all the time to keep the battery capacity saturated.

### 3. Control box

Controller is principally a part of LINKAN A/C system. However, it is the part of user's direct touch. Thus, when making choices, several factors should be noticed:

1. Controller type. According to usage, it can be classified as handset HBXX, Foot Switch FS, Attendant Control Panel ACP, Remote Control HB6X etc.
2. Channels for operation. Please refer to Table 1.
3. Color.
4. The cable length, type and plug specification.
5. Functions for operation to comply with control box. Please refer to Table 2.
6. IP degree.
7. Label.

(Table 1)

CH Controller	CH1	CH2	CH3	CH4
HB3x	●	●	●	
HB6x	●	●		
HB8x	●	●	●	●
ACPxS	●	●	●	●
FS	●	●		
FLS	●	●	●	●
HB23		●		

(Table 2)

Control box Controller	CB02	CB05	CB06	CB07	CB09	CB12	CB16	CB22	LA30
HB3x	●		●	●	●	●	●		●
HB6x	●								
HB8x	●	●		●	●	●	●	●	●
ACPxS	●			●	●	●	●		
FS	●		●	●	●	●	●		
FLS			●		●				
HB23									●

## Label :

### HB3x

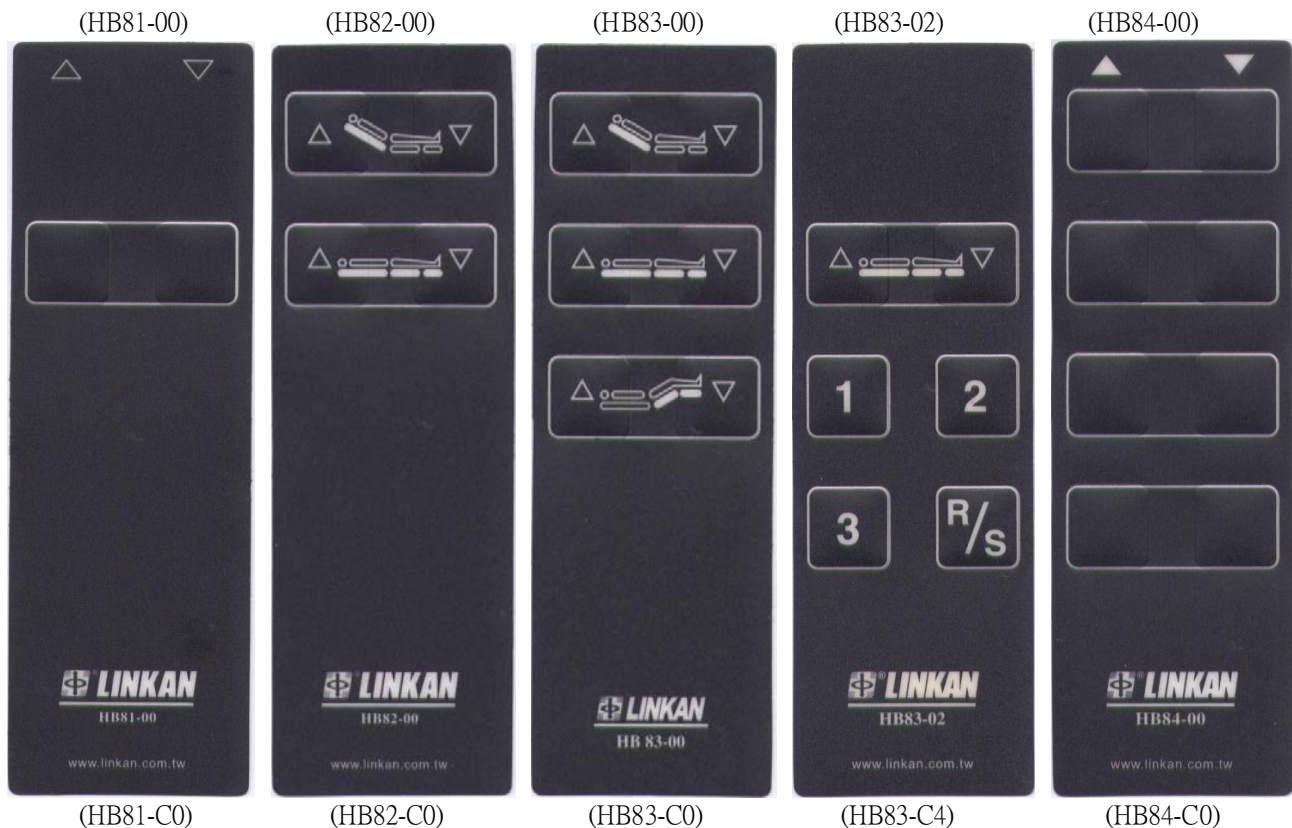
Order NO :



Price NO :

### HB8x

Order NO :

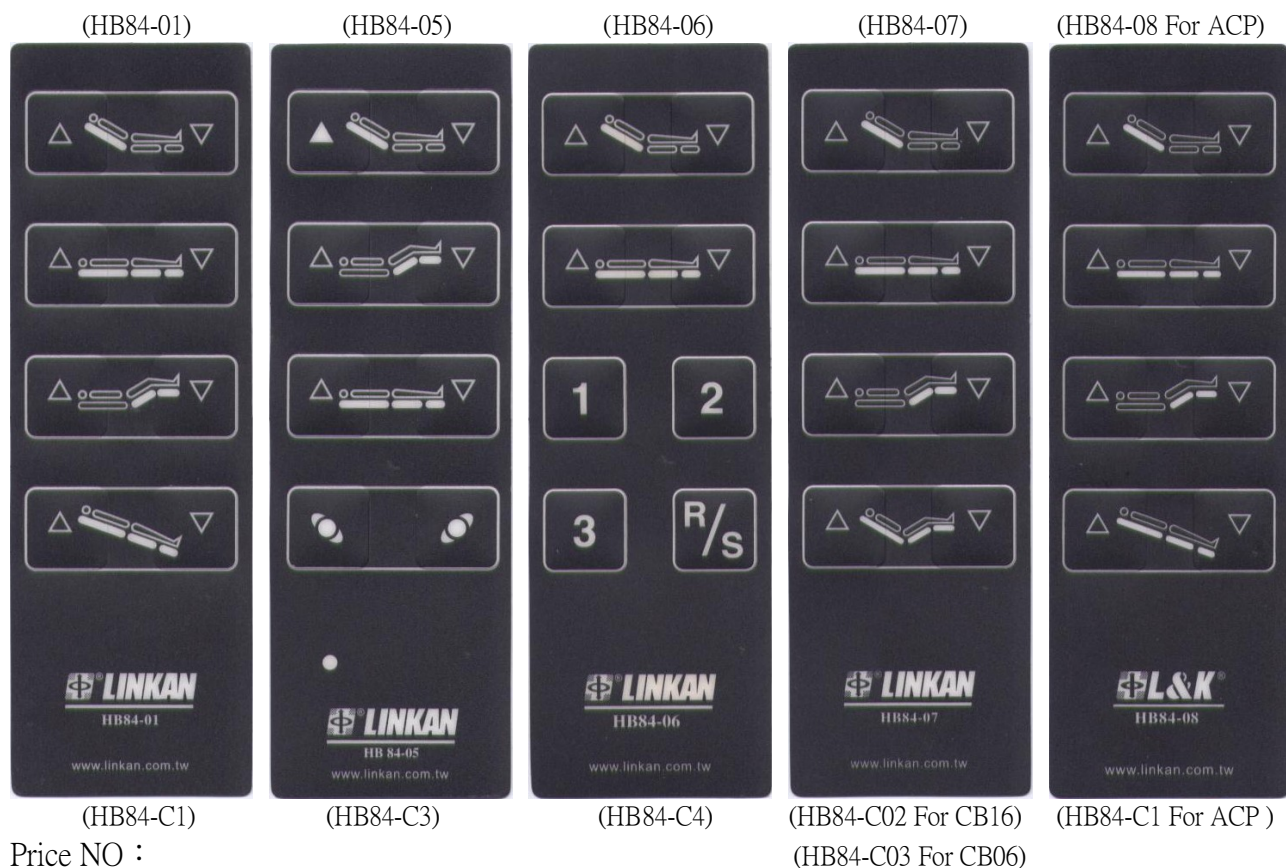


Price NO :

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

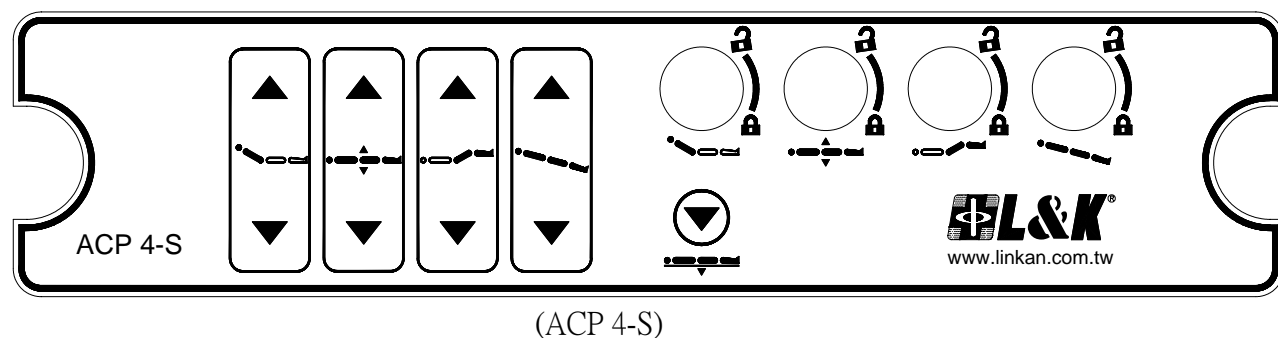
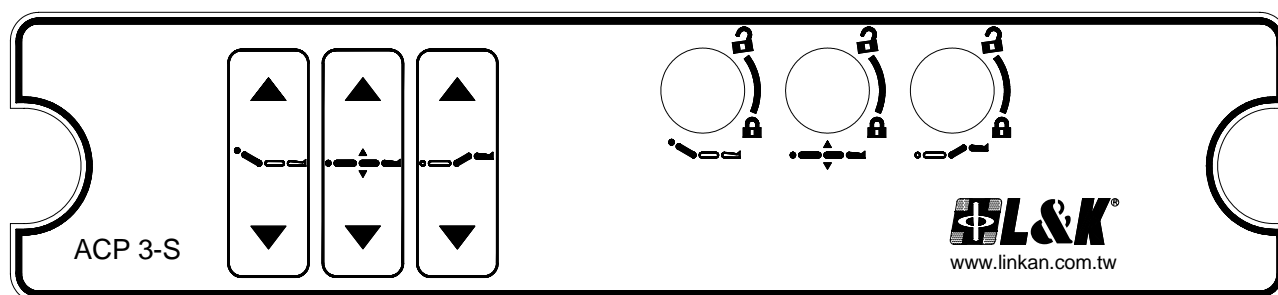


Order NO :



- Note :
1. HB84-C02 is for CB16 only; HB84-C03 is for CB06 only. Pictures on the cover are the same; but PCB functions are different.
  2. HB84-C1 (HB-01) can not used with ACP. If ACP needed, please choose HB84-C1 (HB84-08).

## ACP



Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## 4. Others

### 4.1. IP Degree

IP degree is a classification system, which indicates protection level from certain materials such as dust and water impact to electrical equipment and its enclosures. The following is the description for IP degree. The IP degree is defined as description in EN/IEC 060529.

#### IP 5 4

This digital number indicates the IP degree of protection against ingress of water with harmful effects. The definition is as follows:

- 0 – No protection
- 1 – Protection against vertical falling water drop
- 2 – Protection against vertical falling water drop as the enclosure is  $\pm 15^\circ$
- 3 – Protection against spray water between  $0^\circ \sim 60^\circ$
- 4 – Protection against splashing water from any direction with limited ingress
- 5 – Protection against jetting of water from any direction with limited ingress
- 6 – Protection against powerful water jetting, with limited ingress
- 7 – Protection against temporary immersion
- 8 – Protection against continuous immersion

This digital number indicates the IP degree of protection from ingress of solid external objects.

. The definition is as follows:

- 1 – No protection
- 2 – Protection against solid external objects of 50mm diameter or greater
- 3 – Protection against solid external objects of 12.5mm diameter or greater
- 4 – Protection against solid external objects of 2.5mm diameter or greater
- 5 – Protection against solid external objects of 1.0mm diameter or greater
- 6 – Protection against dust
- 7 – Protection of sealing

## 4.2. Actuator Feature and Its Combination

Type spec.	LA31.3	LA31.4	LA31.5	LA31.9	LA33.3	LA33.4	LA34	LA36	LA37	LA38.I	LA38.O
Stroke(mm)	100~250	100~250	100~250	100~250	50~250	50~250	100	×	100~250	200~300	150~200
Brake(B)		●	●	●							△
Safety nut(M)	●	●			●	●					△
Quick release(Q)			●	●							
Reed switch(R)	●	●	●	●							△
Spline(S)					●	●					△
Standard motor(B)	●	●	●	●	●	●		☆	●		△
Fast motor (S)	●	●	●	●							△
Jack Cable	●	●	●	●	●	●	●	●	●	●	△
Din Cable	●	●	●	●							△

Type spec.	LA32.3	LA32.4	LA32.5	LA32.9	LA35.3	LA35.6
Stroke(mm)	100~250	100~250	100~250	100~250	100~200	100~200
Brake(B)		●	●	●		
Safety nut(M)	●	●			●	●
Quick release(Q)			●	●		
Reed switch(R)	●	●	●	●	●	●
Spline(S)						
Standard motor(B)	●	●	●	●	●	●
Fast motor (S)	●	●	●	●		
Jack Cable	●	●	●	●	●	●
Din Cable	●	●	●	●	●	●

Note:

☆ Motor in LA36 is different from that in other actuator series.

△ LA38.O is a lifting column with actuator outside.

The standard specification is with LA33.

For any particular features for further options, please contact LINKAN A/C technical department.

## 4.3. Control Box Feature and Its Combination

type features	CB02	CB05	CB06	CB07	CB09	CB12	CB16	CB22
CH	3	2		4	4	4	4	4
Earth connection				●	●	●	●	●
External fuse				●	●	●	●	●
EI type transformer	●							
Toroidal transformer		☆1	●	●	●	●	●	●
Turbo function		☆2				●	●	●
Overload short-circuit		☆3			●	●	●	●
External battery			9V	●	●	●	●	●
Memory function		●						
Cable for actuator	Jack	Din	T-Din	Jack	T-Din	Jack	Jack	Jack

Note:

☆1 CB05 must match with TR05. TR05 is with toroidal transformer.

☆2 CB05 is with permanent turbo function.

☆3 CB05 overload short-circuit is by pulse (speed) monitoring.

## 4.4. LINKAN System Combination

Control box Actuator Controller	CB02	CB05	CB06	CB07	CB09	CB12	CB16	CB22
LA31	●	●		●	●		●	●
LA32	●	●		●	●		●	●
LA33	●		●	●			●	
LA34	●							
LA36						●		
LA37				●		●		
LA38.I							●	
LA38.O	●	△					●	
HB3x	●		●	●	●	●	●	
HB6x	●							
HB8x	●	●	△	●	●	●	●	●
ACP	●		△	●	●	●	●	
FS	●		△	●	●	●	●	
FLS	●		△	●	●	●	●	

△ It is possible to have CB05+LA38.O. But it is necessary to contact first with LINKAN A/C technical department.

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## 3 Actuator

### 3-1 LA31



LA31 is a very quiet and powerful actuator designed for a variety of applications, such as those in furniture, care or rehabilitation fields; it is available with a wide range of options and safety protections.

#### Features:

- 24V DC permanent magnet motor
- Thrust up to 6000N; Speed 3.0~16.7mm/s
- Built-in limited switches (not adjustable)
- High-strength plastic housing protects motor and gear
- Scratch and wear-resistant powder painted outer tube
- Strong wear and corrosion resistant stainless steel inner tube
- Elegant and compact design with small installation dimensions
- Steel piston rod eye
- Zinc alloy back fixture
- Duty cycle: Max. 10% or 2 min./ 18 min. in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: Black

#### Options:

- LA31 can be fitted with a brake for increasing self-lock effect
- Safety nut
- Protection class: IP66 (not for wash tunnels)
- Reed-Switch
- Quick-Release Q
- Back stretch sleeve fixture (For only Quick-Release function)
- 0.2/ 0.4m coiled cable with DIN or Jack plug
- Back fixture position 0° or 90°
- Steel groove piston rod eye
- Fast motor
- Color: Gray-White (Min. order: 1,000 pcs)
- Can install Hall Sensor function (Contact R & D department of LINKAN A/C first)



# LA31 Ordering Example:

**LA31. 4 B M R Q - 15 - 100 - B H D**

**TYPE OF PLUG** (Notice plug on the control box)

- D : DIN
- J : JACK
- E : 3P JACK FOR CB24
- X : WITHOUT PLUG

**BACKFIXTURE DIRECTION**

(The direction of actuator installation)

- H : HORIZONTAL
- V : VERTICAL

**TYPE OF MOTOR**

- B : STANDARD
- S : FAST

(The raising of motor power makes actuators more fast and powerful. But the working cycle becomes small)

**COLOR**

- : Black
- + : Gray-white

**CABLE LENGTH**

- 100 = 100cm
- 150 = 150cm
- 200 = 200cm

**STROKE LENGTH**

- 10 = 10cm
- 15 = 15cm
- 20 = 20cm
- 25 = 25cm
- 30 = 30cm

**QUICK RELEASE Q**

(Only used with 5mm pitch screw. Q is for CPR function and can makes beds return to original position quickly by manual operation)

**REED SWITCH**

R : As the worm wheel gear rotate one cycle, Reed Switch will send out 8 signals (pulses). Thus, control box can read signals to operate memory and parallel control.

H : Unipolar Hall Sensor

T : Bipolar Hall Sensor

**SAFETY NUT M** (Only used with 4mm pitch spindle and for avoiding main nut on the spindle breaking down and then bed sliding down suddenly)

**BRAKE B:**

(Raise self-lock power to prevent the sliding of fixed beds.)

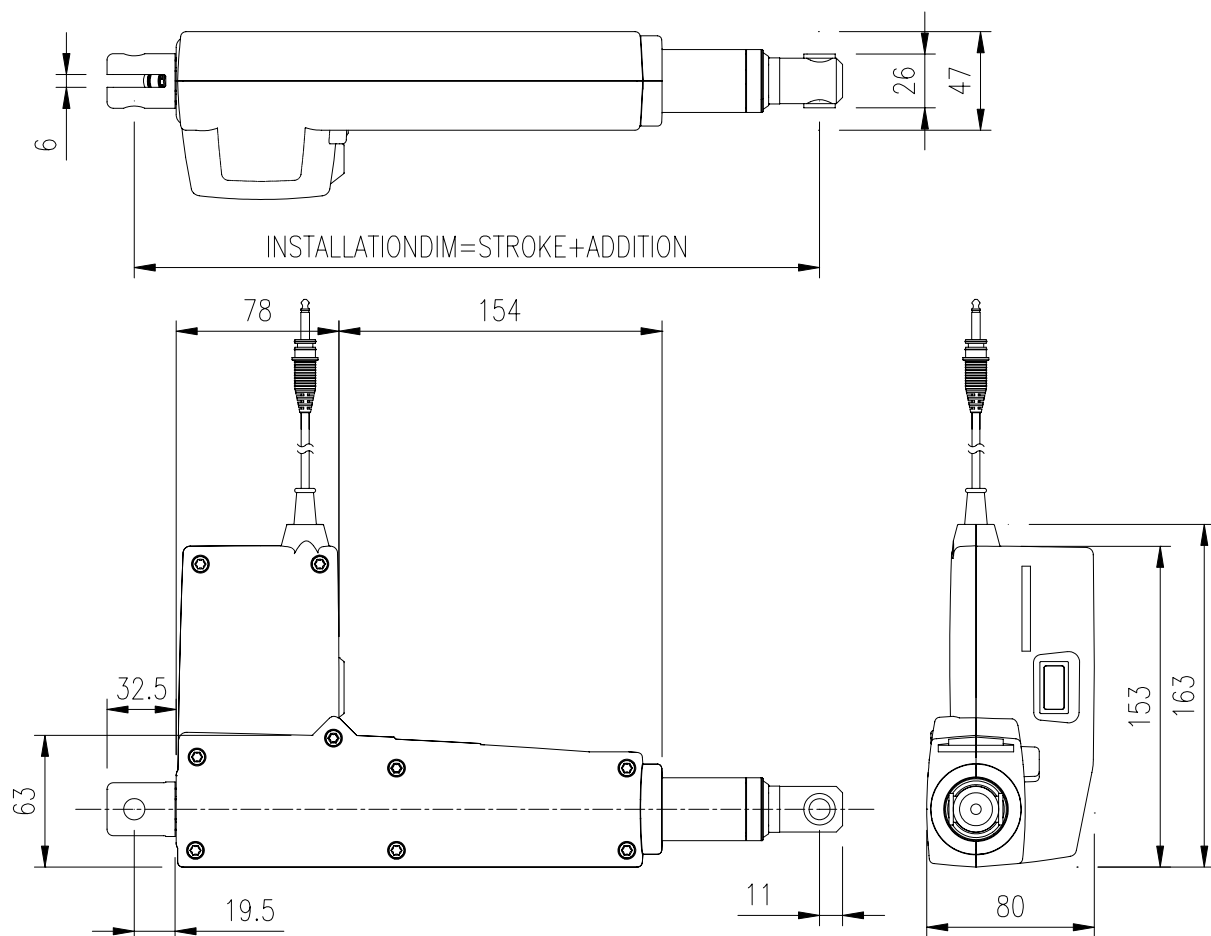
**SPINDLE PITCH**

- 3 : 3.0 mm (Small pitch, power: large, speed: slow)
- 4 : 4.0 mm
- 5 : 5.0 mm
- 9 : 9.0 mm (Large pitch, power: small, speed: fast)

**ACTUATOR TYPE LA31-BASIC**

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

# Dimensions:



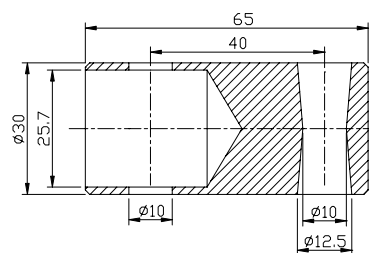
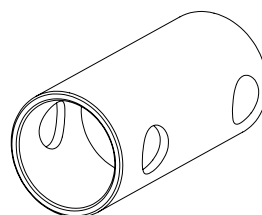
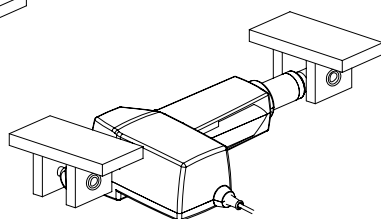
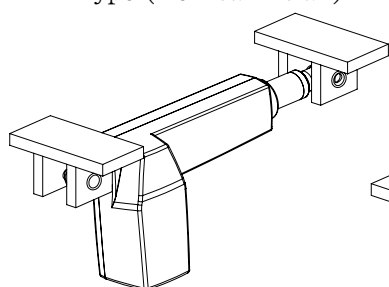
Back direction: (Direction of installation)

Option for Quick Release accessory

V type (Vertical install)

H type (Horizontal install)

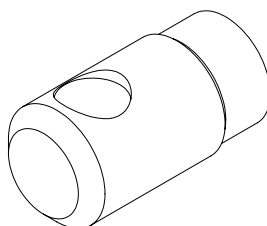
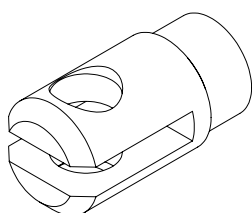
(Back stretch sleeve fixture)



Screw:

Groove

Not-Groove



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### Basic Installation Dimension :

Actuator Stroke mm	100	150	200	250	300
Basic Installation Stroke mm	288	323	373	423	473
Stretch Stroke mm	388	473	573	673	773

### Installation Dimension for Q function :

Actuator Stroke mm	100	150	200
Basic Installation Stroke mm	377	427	477
Stretch Stroke mm	477	577	677

### Notice (Installation):

- ★ If the stroke of LA31 is less than 100mm, all basic installation dimension are 288mm
- ★ When the load is over 4000N, the longest stroke of a actuator is 250mm
- ★ For a actuator equipped with Q function: basic installation dimension is Stroke + 277mm

### Notice (for the installation of Q function)

- ★ The effective stroke length for Quick Release is:  
Standard stroke length minus 10 mm  
E.g. Actuator with quick release is equipped with 150mm stroke length. The effective stroke length for this type is  $\leq 140$  mm
- ★ When LA31 actuator equip Quick Release function, spindle need to be 5mm pitch. The needed released power of actuator is 35 kgs.
- ★ LA31 is not suitable for the pulling device. Suggestion: Actuator is suitable for the load in pushing situations.
- ★ Back stretch sleeve fixture is suggested for Quick Release function

### Data & Graph:

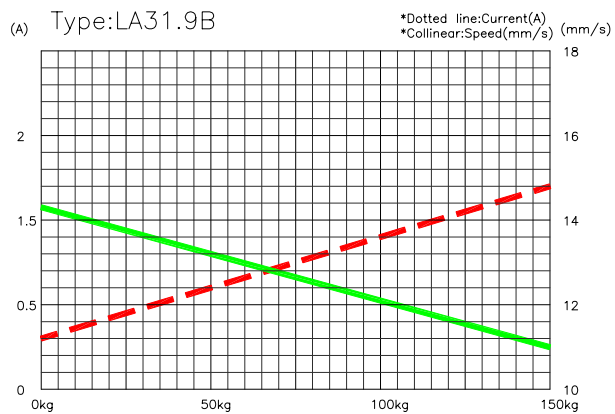
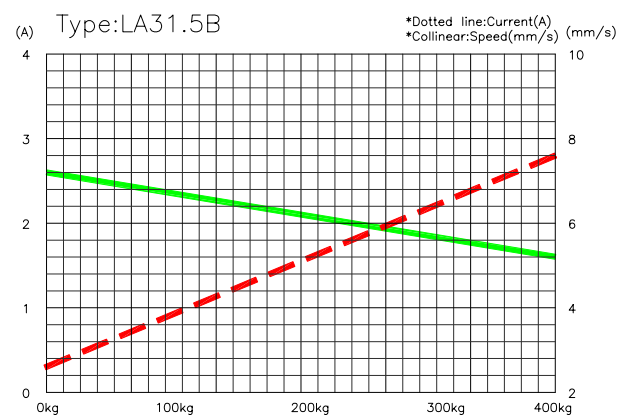
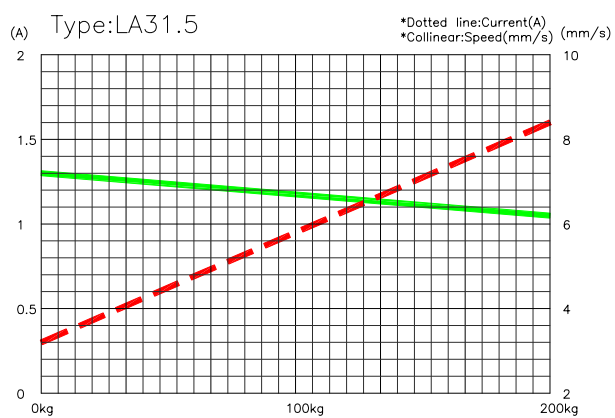
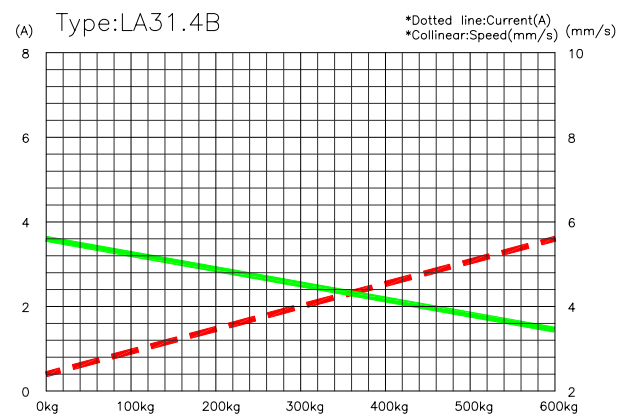
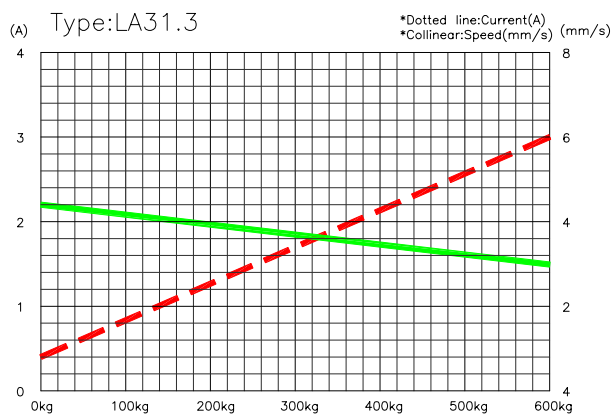
Power Supply: DC24V

Spindle type	Spindle Pitch (mm)	Max load 【N】		Typical Amp.	Typical speed 【mm/s】		Selflock Max 【N】
		Push	Pull	Full load	Unloaded	Full load	Push
Standard 24V motor (Duty Cycle : 10% )							
LA31.3	3	6000	4000	3.0A	4.3	3.0	6000
LA31.4B	4	6000	4000	3.6A	5.8	3.4	6000
LA31.5	5	4000	4000	1.6A	7.2	6.2℃	2000
LA31.5Q	5	4000	2000	1.6A	7.2	6.2	2000
LA31.5B	5	4000	4000	2.8A	7.2	5.2	4000
LA31.9B	9	1500	1500	1.7A	14.3	11	1500
Fast 24V motor (Duty Cycle : 5% )							
LA31.3	3	6000	4000	4.0A	5.4	3.8	6000
LA31.4B	4	6000	4000	4.6A	7.5	4.8	6000
LA31.5	5	4000	4000	2.1A	9.0	7.9	2000
LA31.5B	5	4000	4000	3.5A	9.0	6.7	4000
LA31.9B	9	1500	1500	2.5A	16.7	14.3	1500

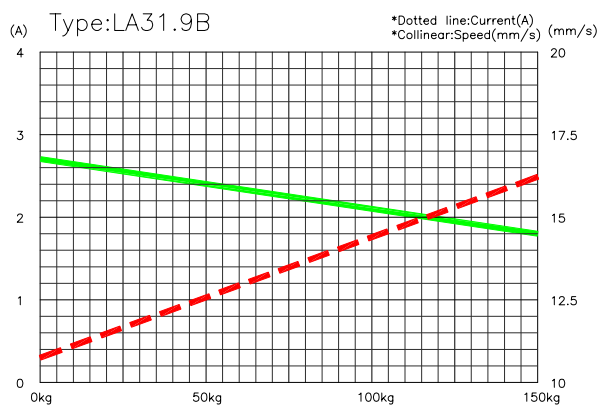
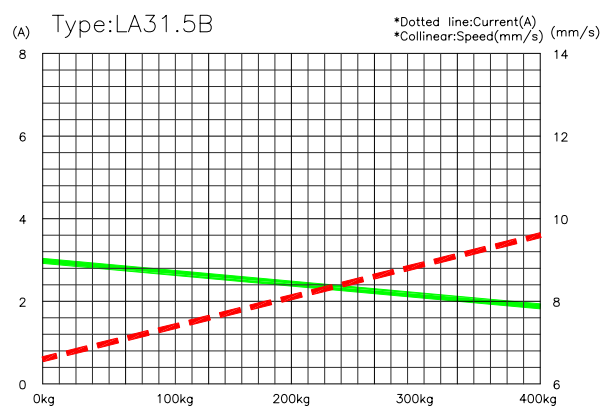
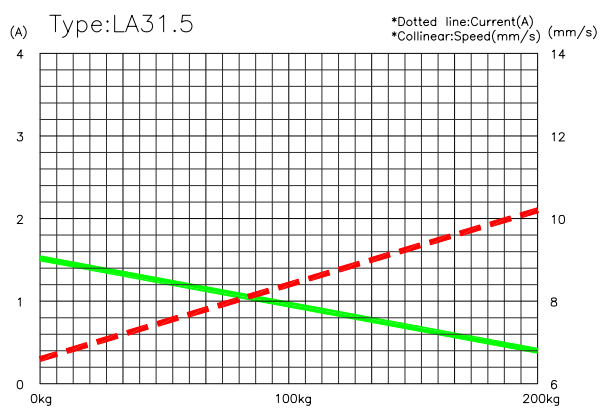
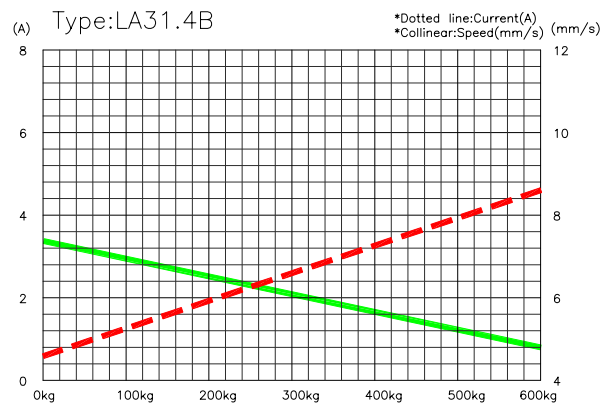
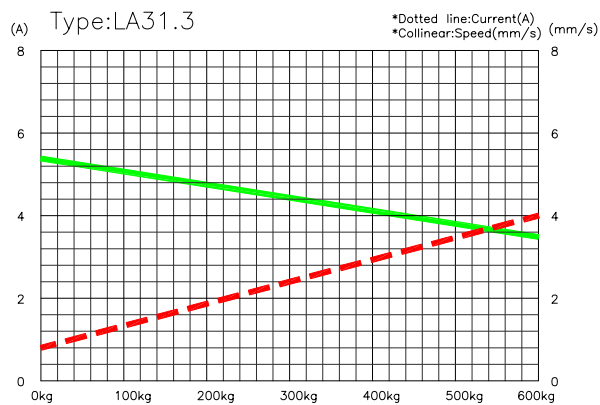
※The data above is with DC24V power supply. If you need the data with compatible control boxes, please contact LINKAN A/C technical department.



## Standard 24V motor :



## Fast 24V motor :





LA33 has an elegant and streamline design suitable to use in furniture, rehabilitation and sports sectors. LA33 is developed for push applications; it has a very strong construction and competitive price.

**Features:**

- 24V DC permanent magnet motor
- Thrust 4000N~ 6000N
- Built-in end stop signal switches (not adjustable)
- Stroke length: 5cm~30cm
- The outside tunnel is aluminum material, exquisite and classical
- Elegant and compact design; small installation dimension
- Duty cycle: Max. 10% or 2 min./ 18 min. in continuous use
- Ambient temperature: +5°C to +40°C
- Color: Black

**Options:**

- Back fixture position 0° or 90°
- Three types for rod eye: Groove+Round 、Oval 、Round
- T-Din Jack Plug for mounting with CB06 or combining LA30
- Spline device
- Protection class: IP51
- Can install Hall Sensor function (Contact R & D department of LINKAN A/C first)

# LA33 Ordering Example:

**LA33. 3 S R - 20 - 200 - R H S**

## TYPE OF PLUG (Notice plug on control box)

- S : JACK (STANDARD)
- X : WITHOUT PLUG
- T : T-Din Jack (FOR CB06 or LA30)
- D : DIN

## BACKFIXTURE DIRECTION (Direction of actuator installation)

- H : HORIZONTAL
- V : VERTICAL

## TYPE OF EYES (Front install head in the spindle)

- O : OVAL
- R : ROUND

## CABLE LENGTH

- 50 = 50cm (Mount with CB06)
- 100 = 100cm
- 150 = 150cm
- 200 = 200cm

## STROKE LENGTH

- 5 = 5cm
- 10 = 10cm
- 15 = 15cm
- 20 = 20cm
- 25 = 25cm
- 30 = 30cm

## Reed Switch

R : As the worm gear rotate one cycle, Reed Switch sends out 4 signals(pulses). R can let control box to read signal and run memorizing and positioning control.

H : Unipolar Hall Sensor

T : Bipolar Hall Sensor

## FUNCTION (Avoid being clipped and fixed when actuator encounter obstacles in the movement, only for Push)

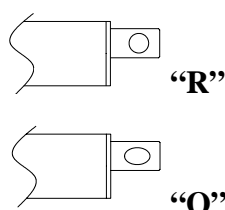
- S : SPLINE (3mm pitch spindle only)
- N : Without SPLINE

## SPINDLE PITCH

- 3 : 3 mm
- 6 : 6 mm

## ACTUATOR TYPE LA33-BASIC

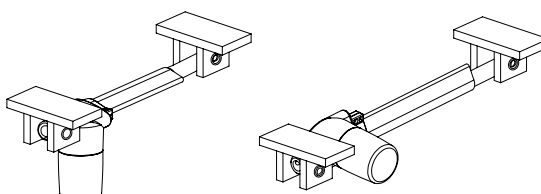
## Rod Eye Type



## Back Direction (Direction of Installation)

### V type(Verticall install)

### H type(Horizontal install)

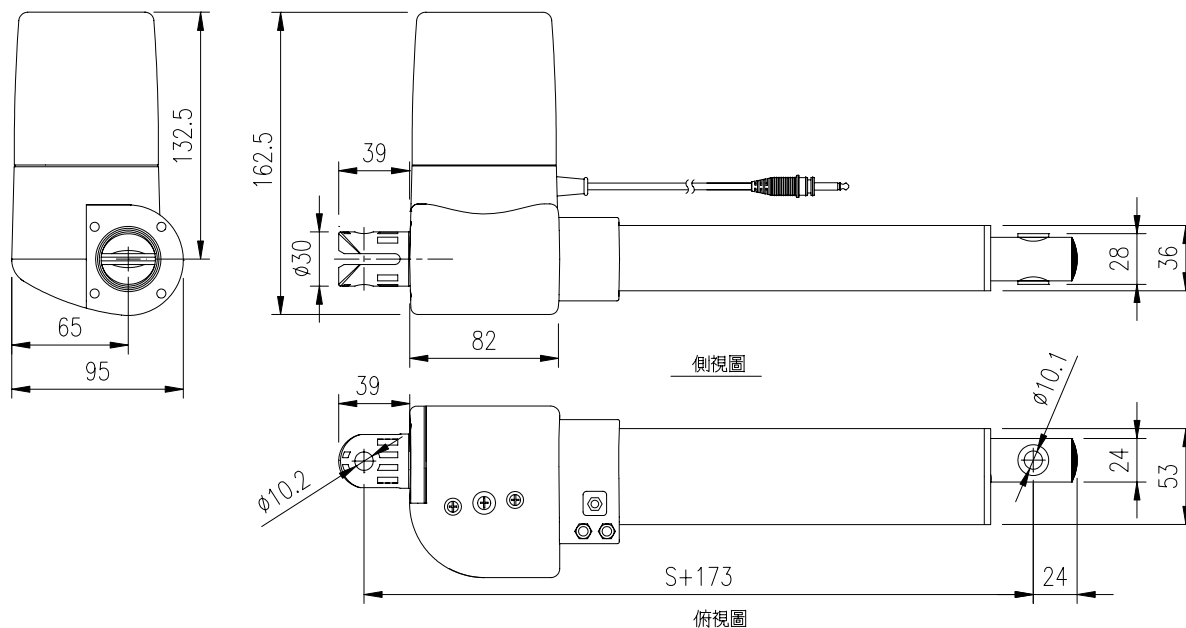


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## Dimensions:

## Installation Dimensions:

If LA33 stroke exceeds 100 mm, basic installation is S+173 mm



## LA33 Dimensions

Actuator Stroke mm	100	150	200	250	300
Basic Installation Dimension mm	288	323	373	423	473
Stretch Stroke mm	388	473	573	673	773

## Notice:

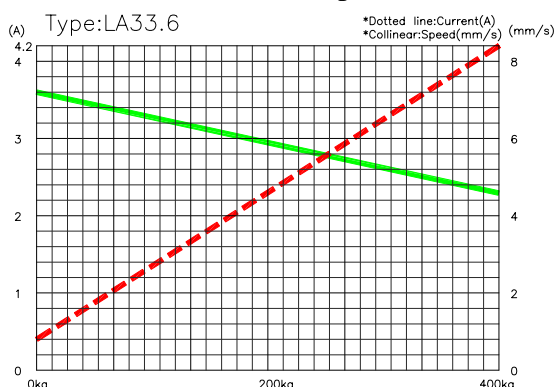
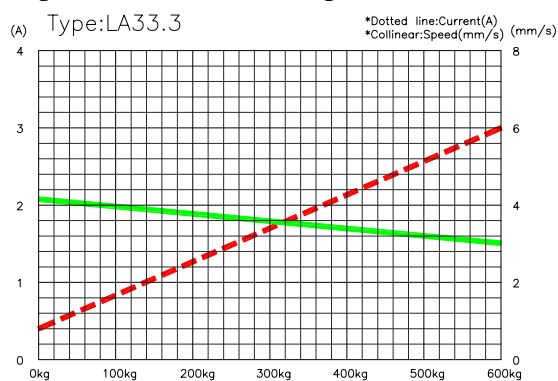
- 3mm pitch only when using rod eye with Groove + Round specification
- T-Din Jack Plug needed when mounting with CB06, 100mm above stroke of actuators needed when mounted with CB06
- Spline function is only used with LA33.3

## Data & Graph:

Type	Spindle Pitch (mm)	Max load 【N】		Typical Amp. Full load	Typical speed 【mm/s】		Selflock Max 【N】
		Push	Pull		Unloaded	Full load	
LA33.3	3	6000	4000	3.0A	4.1	3.0	6000
LA33.6	6	4000	4000	4.2A	7.5	4.3	4000

(Duty Cycle : 10% )

※ The data above is the standard of using DC24V power supplier. If you need the data of the compatible control boxes, please contact with LINKAN A/C technical department.



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**3-3 LA36**

LA36 is an innovative actuator. The unique design is suitable for many applications in furniture, rehabilitation, medical and industry sectors. The actuator system can be operated manually when no electricity. The distinctive mechanical structure is a patent design. The electrically driven system with manual operation is the most outstanding feature.

**Features:**

- 24V DC permanent magnet motor
- Force: 4000~6000N
- Elegant and compact design; the installation dimension is flexible
- Both electrical and manual functions. Possible to be installed directly into traditional crank beds
- Low noise
- Duty cycle: Max. 10% or 2 min./ 18 min. in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP31
- Color: black
- Used with CB12 only

**Options:**

- Housing color: Gray-White (Min. Order: 1,000 pcs)
- MOLR: Manual crank with overload protection device
- Crank

## LA36 Ordering Example:

**LA36. 4 - 200 - J**

**TYPE OF PLUG** (Notice plug on control box)

J : JACK

**CABLE LENGTH**

200 = 200cm

250 = 250cm

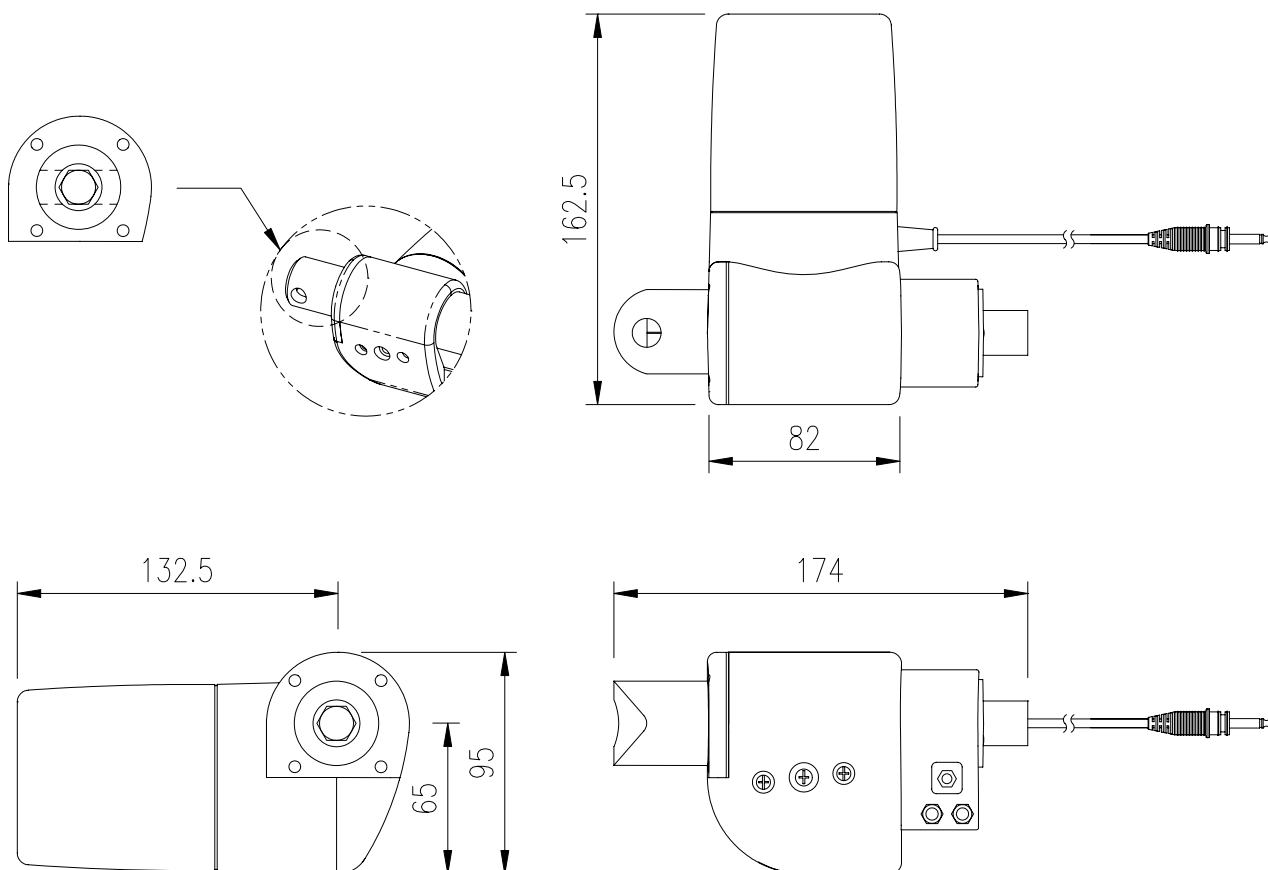
**FORCE**

4 : 4000N

6 : 6000N

**ACTUATOR TYPE** LA36-BASIC

## Dimensions:



## Notice:

- To obtain the best performance, it is necessary to use actuator under these conditions: the outside diameter of the spindle arbor must be between  $\varnothing 18$  and  $\varnothing 20$ mm, the pitch of the tube must be 4mm or 3mm.
- If the spindle connected with LA36 didn't equip built-in over-load protection device, please choose MOLR. If the spindle already equipped it, crank can be common one.
- Only used with CB12 control box



### 3-4 LA38



LA38 Lifting Column is proper design for applying vertical movement of heavy materials. It is just need an actuator, a proper control box, and a handset and then can easily be operated and used.

The advanced design and the high-quality structure can sustain high bending force and have long life span.

LA38 is ideal for lifting heavy load vertically, such as working tables, operation table, obstetric table and other applications.

**Features:**

- LA38 is a special-designed elastic lifting, and can equip Linkan A/C linear actuator.
- Special design to overcome the bending force and torque when applications lift vertically.
- High thrust, long life-span, low noise.
- Compact design with high strength.
- The duty cycle is upon the selected LINKAN A/C actuator
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- LA38 built-in actuator can be used with CB09 and CB16 control box
- LA38 built-out actuator can be used with CB02, CB05, CB07, CB09 and CB16

**Options:**

- Reed-switch (For built-out actuator , easy for control box to read signals; then execute memory and parallel functions)
- Gas spring (to increases the lifting capacity)

# LA38 Ordering Example:

**LA38. I 2 - 3 - 200 - 415**

## Installation Dimensions mm

365 = 365mm (stroke=150mm)

415 = 415mm (stroke=200mm)

465 = 465mm (stroke=250mm)

515 = 515mm (stroke=300mm)

## Stroke Length mm

150 = 150mm

200 = 200mm

250 = 250mm

300 = 300mm

## Spindle pitch mm

3 : 3 mm

4 : 4 mm

## Sections

2 : 2 sections

3 : 3 sections

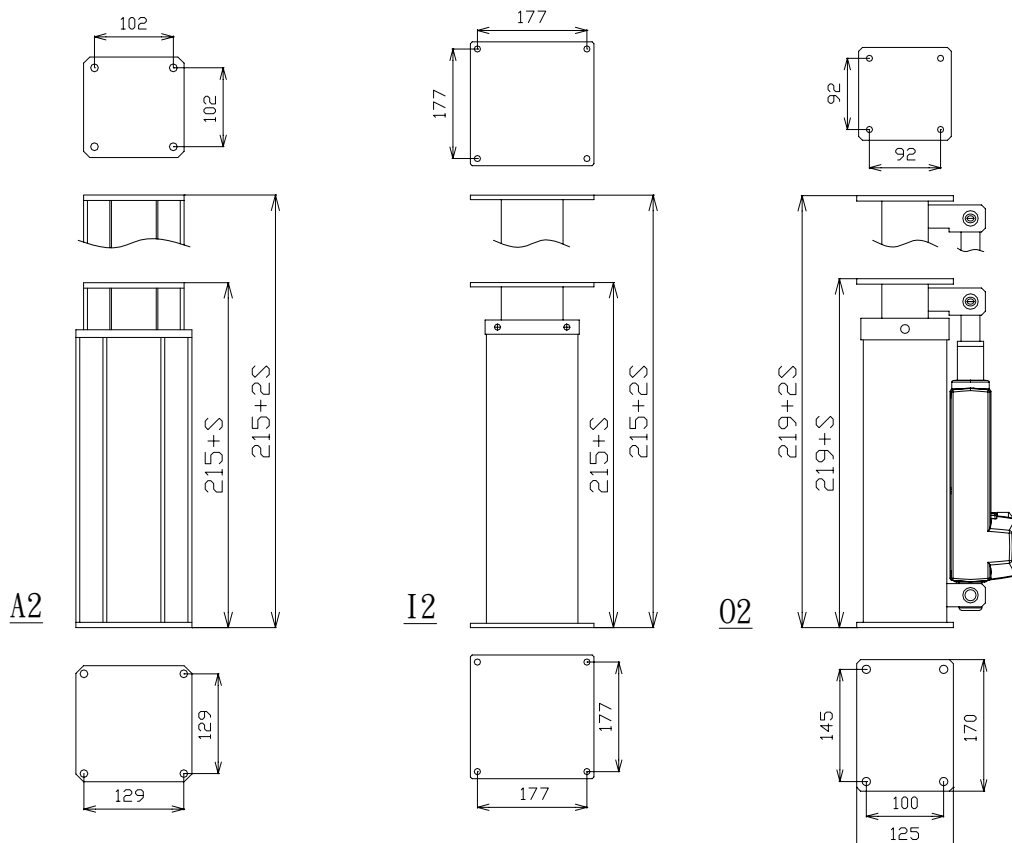
## Structure

I : With actuator inside—Steel

O : With actuator outside—Steel

A : With actuator inside—Aluminum Alloy

## Dimensions:



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**LA38.A2 Basic Installation Dimension**

Actuator Stroke mm	200	250	300
Basic Installation Dimension mm	415	465	515
Lifting Total Height mm	615	715	815

**LA38.I2 Basic Installation Dimension**

Actuator Stroke mm	200	250	300
Basic Installation Dimension mm	415	465	515
Lifting Total Height mm	615	715	815

**LA38.O2 Basic Installation Dimension**

Actuator Stroke mm	150	200
Basic Installation Dimension mm	369	419
Lifting Total Height mm	519	619

Type	Max Load-N	Speed 0/full-mm/s	Current full-A	Max Bending Force- N/m
<b>LA38.O2-4-XXX-XXX</b>	4000N	5.4/3.8 mm/s	2.6A	500 N/m
<b>LA38.O2-3-XXX-XXX</b>	6000N	4.1/3.0 mm/s	3.0A	500 N/m
<b>LA38.I2-4-XXX-XXX</b>	3000N	6.0/3.0 mm/s	3.5A	1000 N/m
<b>LA38.I2-3-XXX-XXX</b>	6000N	4.1/3.0 mm/s	4.0A	1000 N/m

**Notice :**

Stroke length:

There are two specifications for LA38.O2 : 200mm and 150mm.

There are three specifications for LA38.I2: 300mm, 250mm and 200mm.

**3-5 LA37**

LA37 is an actuator with robust spindle, unique overload device and strong motor. The actuator structure is a patent design suitable for the field of hospitals, cares, and rehabilitation. When the power is off or the motor break down, the actuator can be operated with manual crank. Besides, the installation is much easier. The manual and electrical dual operation is a feature of LA37.

**Features :**

- 24V DC permanent magnet motor
- Thrust from 4000N to 6000N
- Robust structure design with easy installation
- Electrical and manual dual operation
- Built-in overload structure design
- Low noise
- Duty cycle: Max. 10% or 2 min./ 18 min. in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP31
- Color: Black
- Used with CB07-S control box

**Options:**

- Housing color: Gray-White (Min. Order: 1,000 pcs)
- Crank

# LA37 Ordering Example :

**LA37. 6- 10 - 250 - H J**

**TYPE OF PLUG** (Notice plug on control box)  
J : JACK PLUG

**BACKFIXTURE DIRECTION** (Direction of installation)  
H : HORIZONTAL  
V : VERTICAL

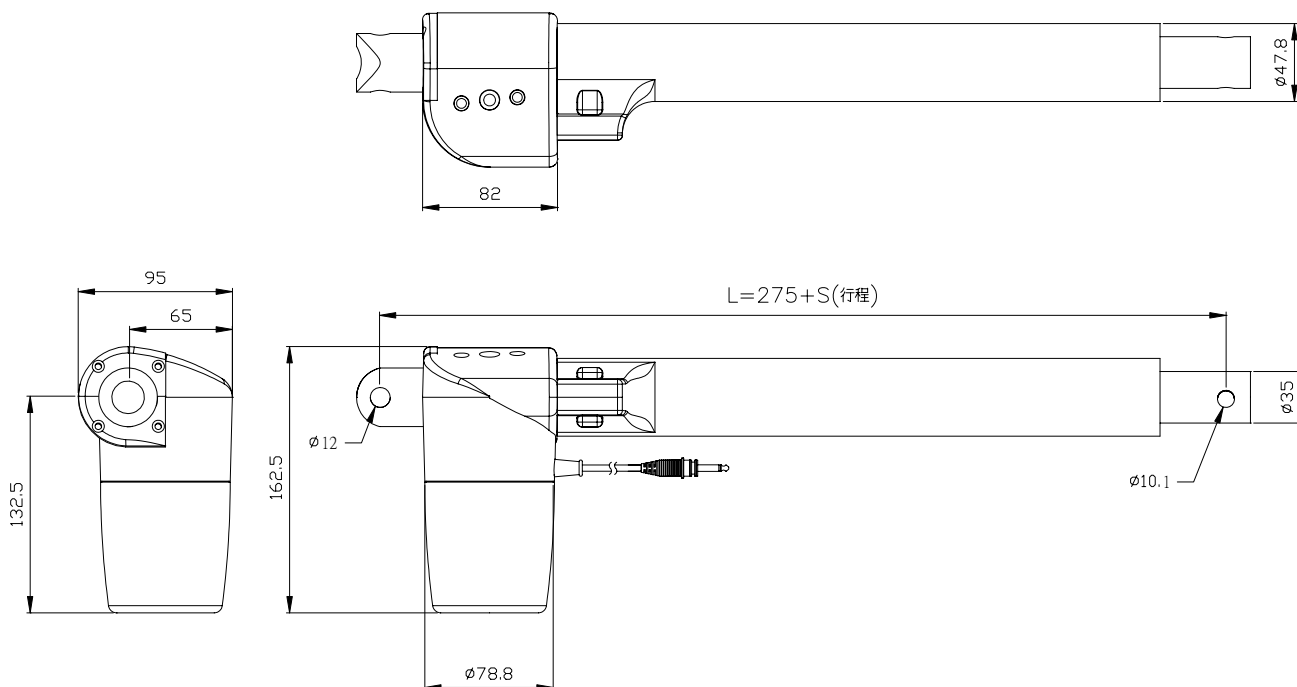
**CABLE LENGTH**  
200 = 200cm  
250 = 250cm

**STROKE LENGTH**  
10 = 10cm  
15 = 15cm  
20 = 20cm  
25 = 25cm

**FORCE**  
4: 4000N  
6: 6000N

**ACTUATOR TYPE** LA37

## Dimensions:



## Notice :

The length (L) is the same for S=100mm & 150mm

$$L = 275 + 150 = 425\text{mm}$$

## LA37 Installation Dimension :

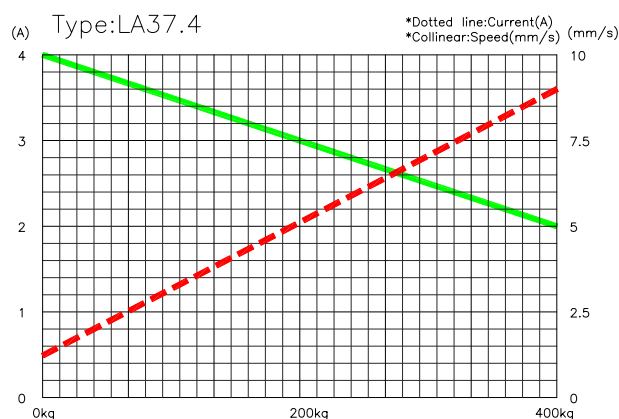
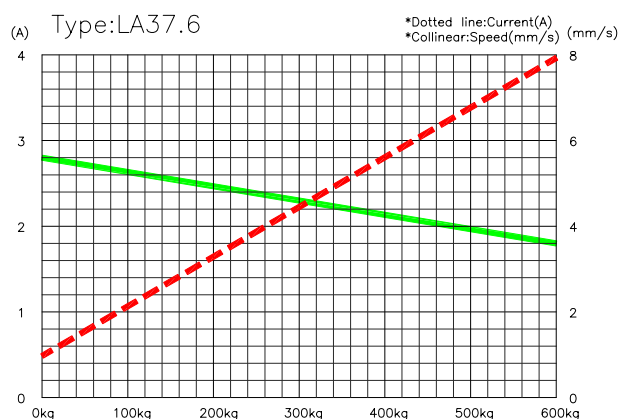
Actuator Stroke mm	100	150	200	250
Basic Installation Stroke mm	425	425	475	525
Stretch Stroke mm	525	575	675	775

### Notice:

- The basic installation dimension is the same for 100mm and 150mm stroke
- Can choose manual crank for the power shortage or motor breakdown (Option)
- 4000N actuator suggested if used in back 、 leg parts of hospital beds. 6000N actuator suggested if Lifting column is used in lifting beds.
- Must used with CB07-S control box
- The overload protection device will work when actuators move upper and lower limit. Then all actions should be stopped. If operations still continue, actuator will warn users by making buzz sound.
- When the load is more than 3000N or the applications of the impact, please apply actuator to the pushing direction.

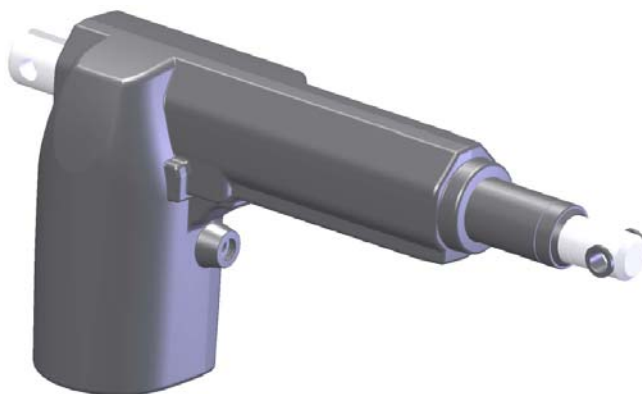
### Data & Graph :

Type	Max. load 【N】		Current 【A】	Typical Speed 【mm/s】		Self Lock Max. 【N】
	Push	Pull	Full	Unload	Full Load	Push
LA37.4	4000	3000	3.6	10	5	3000
LA37.6	6000	3000	3.9	5.7	3.6	6000



(Duty Cycle: 10%)

※The data above is with DC 24V power supply. For need of data with compatible LINKAN A/C control box, please contact LINKAN A/C technical department.

**3-6 LA32**

LA32 is a very quiet and powerful actuator designed for a variety of applications, such as those in furniture, care or rehabilitation fields; it is available with a wide range of options and safety protections.

**Features:**

- 24V DC permanent magnet motor
- Thrust 1500N~6000N; Speed 3.0~16.7mm/s
- Built-in limited switches (not adjustable)
- High-strength plastic housing protects motor and gear
- Scratch-resistant and wear-resistant powder painted outer tube
- Strong wear and corrosion resistant stainless steel inner tube
- Elegant and compact design with small installation dimensions
- Steel piston rod eye
- Zinc alloy back fixture
- Duty cycle: Max. 10% or 2 min./ 18 min. in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: Black

**Options:**

- LA32 can be fitted with a brake for increasing self-lock effect
- Safety nut
- Protection class: IP66 (not for wash tunnels)
- Reed-Switch
- Quick-Release
- Back stretch sleeve fixture (For only Quick-Release function)
- 0.2/ 0.4m coiled cable with DIN or Jack plug
- Back fixture position 0° or 90°
- Steel groove piston rod eye
- Fast motor
- Color: Gray-White (Min. order: 1,000 pcs)
- Can install Hall Sensor function (Contact R & D department of LINKAN A/C first)





## LA32 Ordering Example:

**LA32. 4 B M R Q - 15 - 100 - B H D**

**TYPE OF PLUG** (Notice plug on the control box)

D : DIN

J : JACK

E : 3P JACK FOR CB24

X : WITHOUT PLUG

**BACKFIXTURE DIRECTION**

(The direction of actuator installation)

H : HORIZONTAL

V : VERTICAL

**TYPE OF MOTOR**

B : STANDARD

S : FAST

(The raising of motor power makes actuators more fast and powerful. But the working cycle becomes small)

**COLOR**

- : Black

+ : Gray-white

**CABLE LENGTH**

100 = 100cm

150 = 150cm

200 = 200cm

**STROKE LENGTH**

10 = 10cm

15 = 15cm

20 = 20cm

25 = 25cm

30 = 30cm

**QUICK RELEASE Q**

(Only used with 5mm pitch screw. Q is for CPR function and can makes beds return to original position quickly by manual operation)

**REED SWITCH**

R : As the worm wheel gear rotate one cycle, Reed Switch will send out 8 signals (pulses). Thus, control box can read signals to operate memory and parallel control.

H : Unipolar Hall Sensor

T : Bipolar Hall Sensor

**SAFETY NUT M** : (Only used with 4mm pitch spindle and for avoiding main nut on the spindle breaking down and then bed sliding down suddenly)

**BRAKE B:**

(Raise self-lock power to prevent the sliding of fixed beds.)

**SPINDLE PITCH**

3 : 3.0 mm (Small pitch, power: large, speed: slow)

4 : 4.0 mm

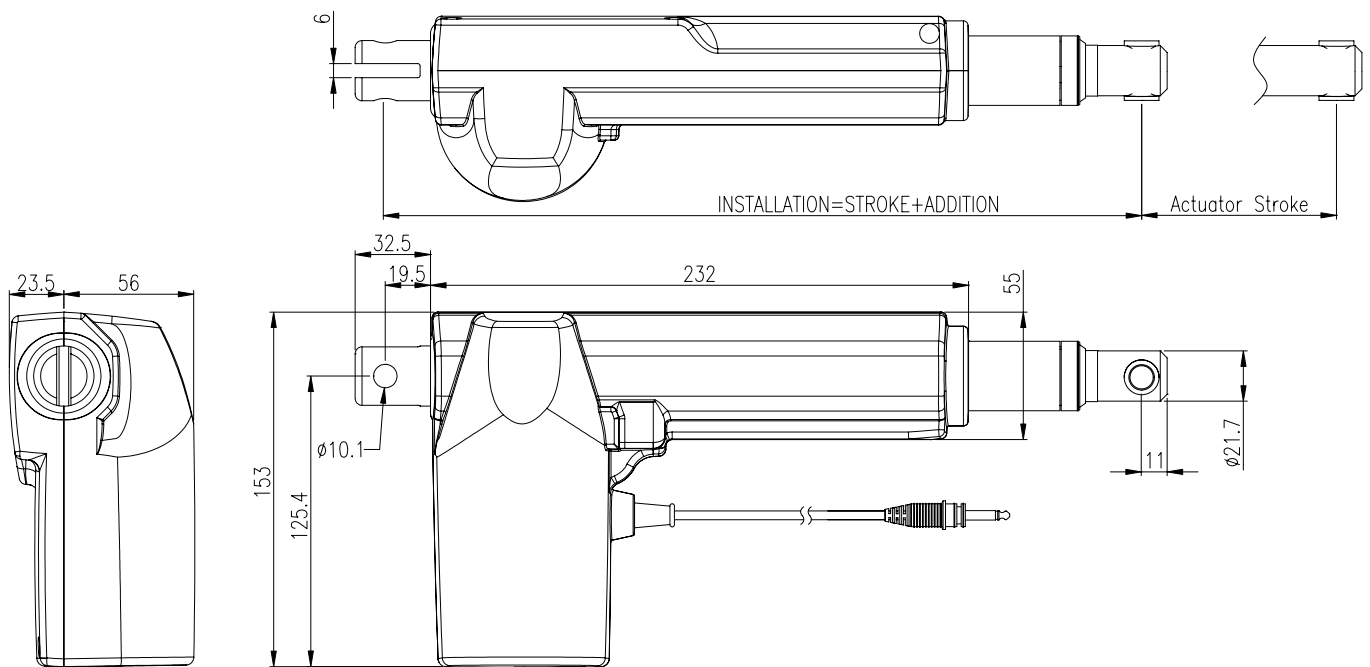
5 : 5.0 mm

9 : 9.0 mm (Large pitch, power: small, speed: fast)

**ACTUATOR TYPE LA32-BASIC**

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## Dimensions:



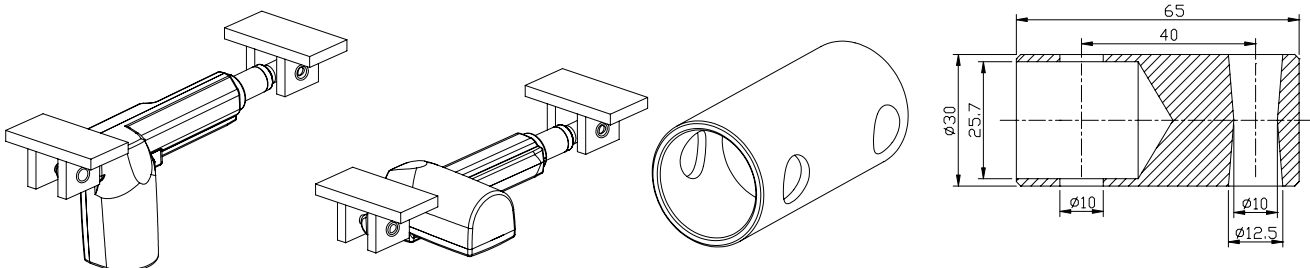
Back direction: (Direction of installation)

Option for Quick Release accessory

V type (Vertical install)

H type (Horizontal install)

(Back stretch sleeve fixture)



### Basic Installation Dimension :

Actuator Stroke mm	100	150	200	250	300
Basic Installation Stroke mm	288	323	373	423	473
Stretch Stroke mm	388	473	573	673	773

### Installation Dimension for Q function :

Actuator Stroke mm	100	150	200
Basic Installation Stroke mm	377	427	477
Stretch Stroke mm	477	577	677

### Notice (Installation):

- ★ If the stroke of LA32 is less than 100mm, all basic installation dimension are 288mm
- ★ When the load is over 4000N, the longest stroke of a actuator is 250mm
- ★ For a actuator equipped with Q function, basic installation dimension is Stroke + 277mm

### Notice (for the installation of Q function)

- ★ The effective stroke length for Quick Release is:  
Standard stroke length minus 10 mm  
E.g. Actuator with quick release is equipped with 150mm stroke length. The effective stroke length for this type is  $\leq 140$  mm
- ★ When LA32 actuator equip Quick Release function, spindle need to be 5mm pitch. The needed released power of actuator is 35 kgs.
- ★ LA32 is not suitable for the pulling device. Suggestion: Actuator is suitable for the load in pushing situations.
- ★ Back stretch sleeve fixture is suggested for Quick Release function

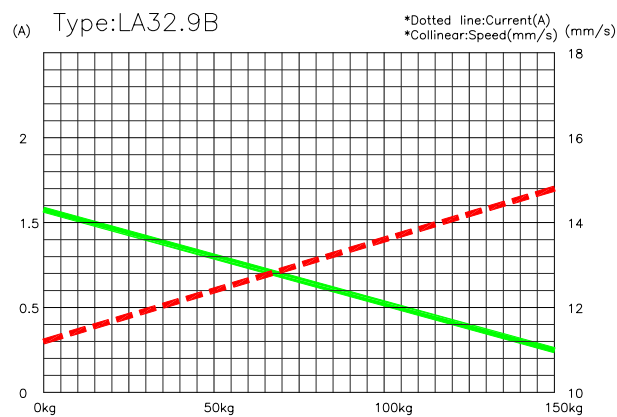
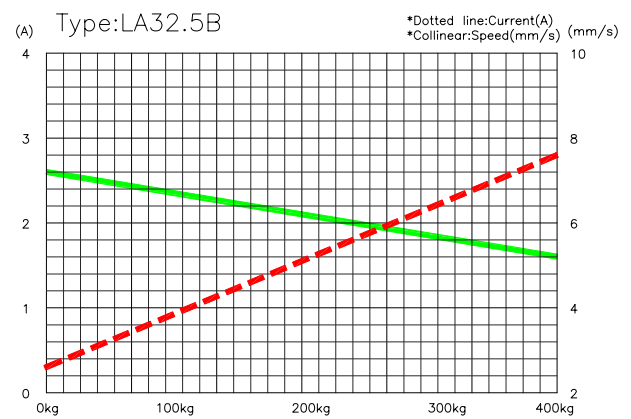
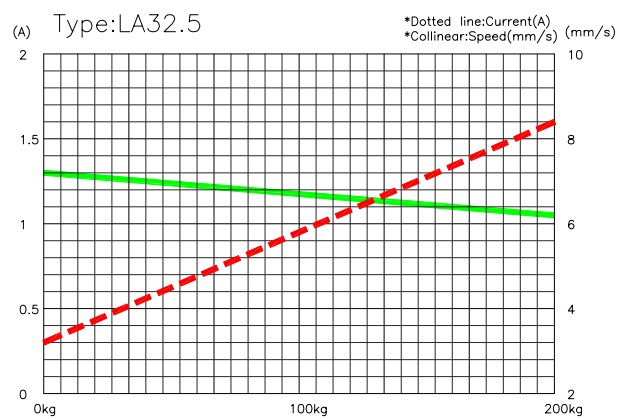
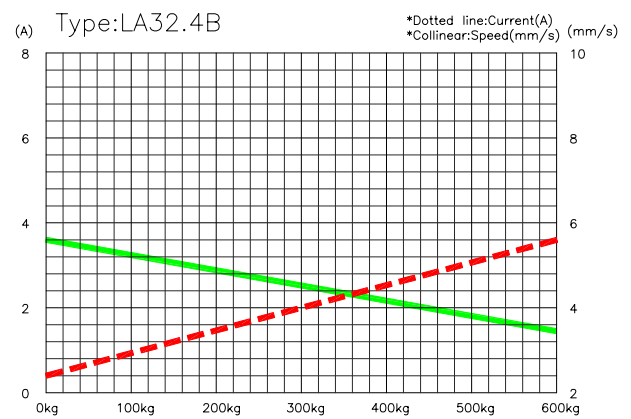
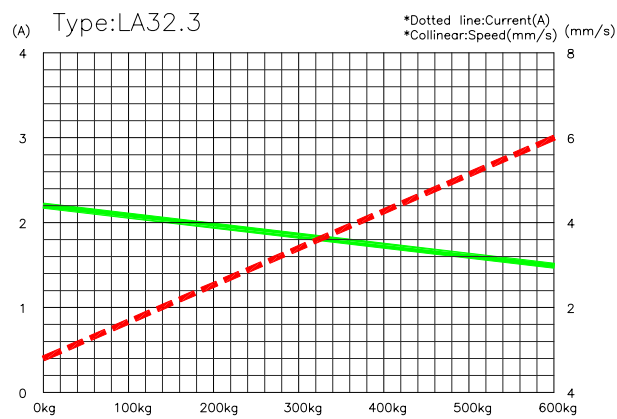
### Data & Graph:

#### Power Supply: DC24V

Spindle type	Spindle Pitch ( mm )	Max load 【N】		Typical Amp.	Typical speed 【mm/s】		Selflock Max 【N】
		Push	Pull	Full load	Unloaded	Full load	Push
Standard 24V motor (Duty Cycle : 10% )							
LA32.3	3	6000	4000	3.0A	4.3	3.0	6000
LA32.4B	4	6000	4000	3.6A	5.8	3.4	6000
LA32.5	5	4000	4000	1.6A	7.2	6.2	2000
LA32.5Q	5	4000	2000	1.6A	7.2	6.2	2000
LA32.5B	5	4000	4000	2.8A	7.2	5.2	4000
LA32.9B	9	1500	1500	1.7A	14.3	11	1500
Fast 24V motor (Duty Cycle : 5% )							
LA32.3	3	6000	4000	4.0A	5.4	3.8	6000
LA32.4B	4	6000	4000	4.6A	7.5	4.8	6000
LA32.5	5	4000	4000	2.1A	9.0	7.9	2000
LA32.5B	5	4000	4000	3.5A	9.0	6.7	4000
LA32.9B	9	1500	1500	2.5A	16.7	14.3	1500

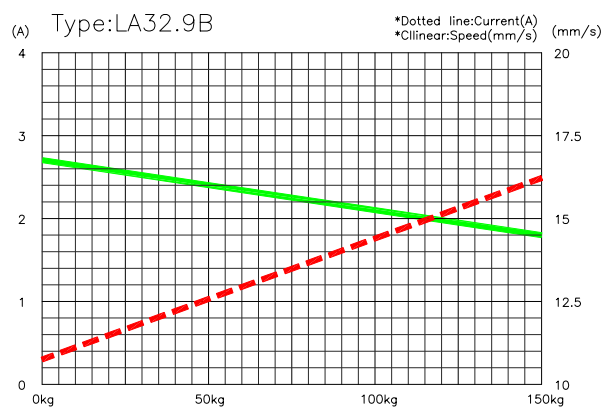
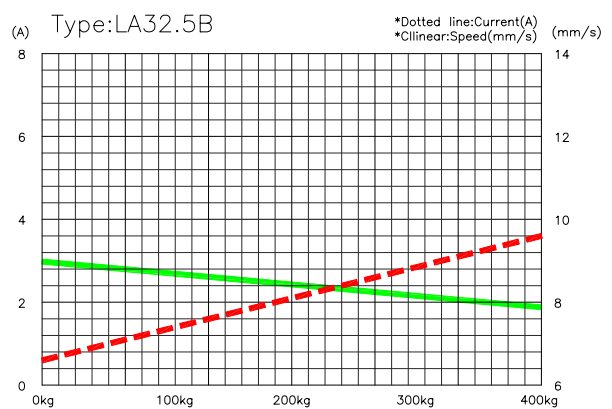
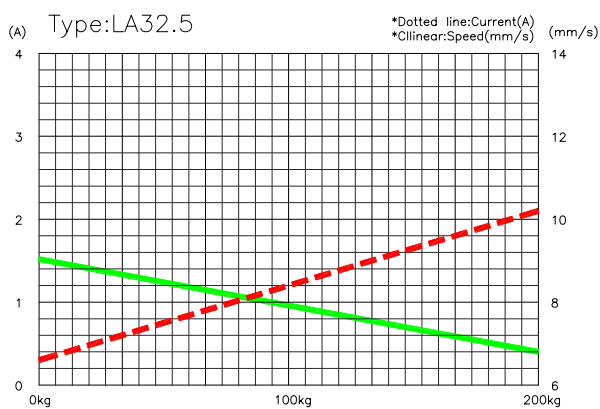
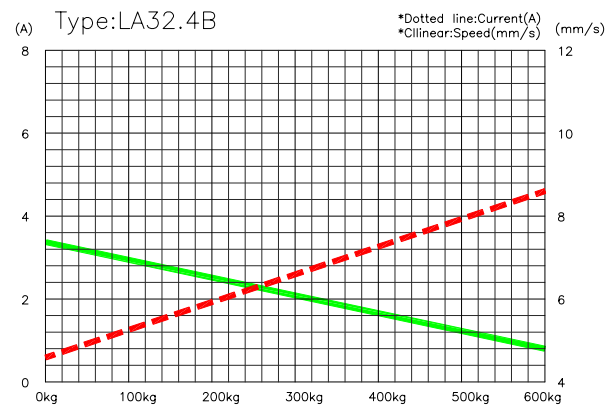
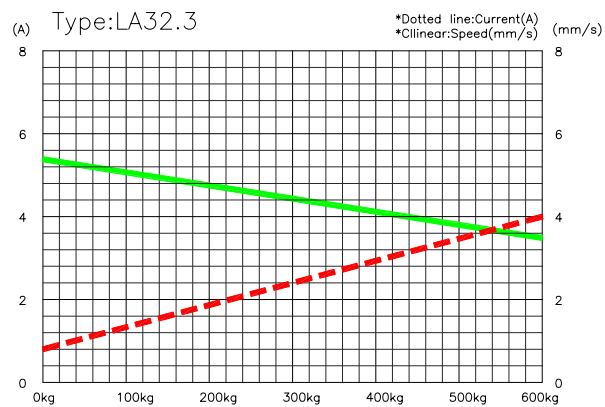
※The data above is with DC24V power supply. If you need the data with compatible control boxes, please contact LINKAN technical department.

## Standard 24V motor :



Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## Fast 24V motor :



Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.



LA30 can be used in various home living beds. Its easy installation and simple structure create enjoyments for the living with comfortable sleeping environment.

**Features:**

- Simple external structure and easy installation
- Low noise
- Solid structure and durable feature
- Main power voltage: AC 220-240V 50Hz ; AC100-120V 60Hz
- Duty cycle max. 10% or 6 min. rest per hour in continuous use
- Ambient temperature: +5°C to +40°C
- Standard protection level: IP20
- Low electricity consumption, high thrust 4000NX2
- Special safety button for sliding
- Color: Black

**Options:**

- Can add one-axis or two-axes additional actuators for elevating or tilting of bed
- Can use 9V alkaline battery as spares when there are shortage of interior electricity, but only work for downward movements
- Can combine with LA33 ( Max. 2 pcs) for elevating and tilting of bed

# CB16Ordering Example:

LA30.0 - 87 - 69 - 2UL - 22

Mains Voltage (Power voltage input)

12 = 120V

22 = 220V

Cables

2EU : 2P , straight , EU plug

2JP : 2P , straight , JP plug

2UL : 2P , straight , UL plug

2AUS : 2P , straight , AUS plug

Leg stroke

48 : 48mm

69 : 69mm

74 : 74mm

87 : 87mm

Back stroke

48 : 48mm

69 : 69mm

74 : 74mm

87 : 87mm

Additional actuator(The selection of funtions of addition acutator)

0 : no additional actuator

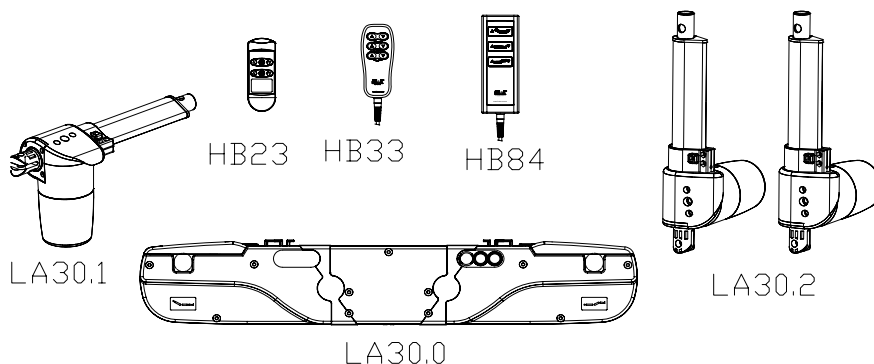
1 : 1 additional actuator (LA33)

2 : 2 additional actuators (LA33)

Actuator type LA30

## LA30 Feature and Its Combination

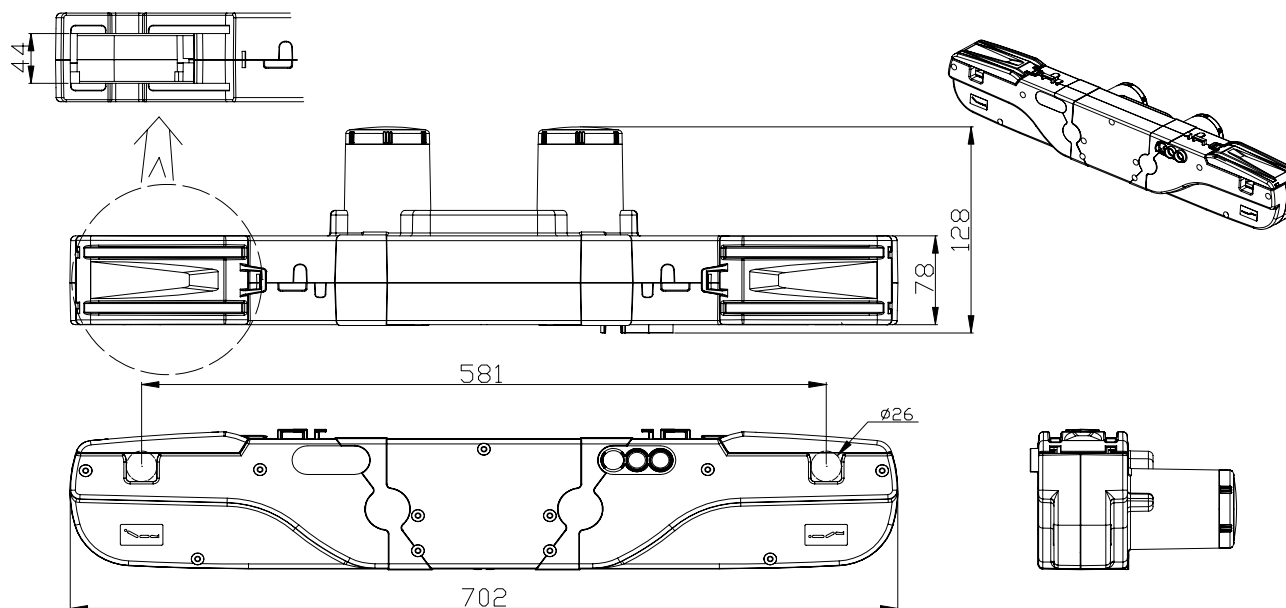
Handset	HB23	HB33	HB84
Actuator			
LA30.0	◎		
LA30.1		◎	
LA30.2			◎



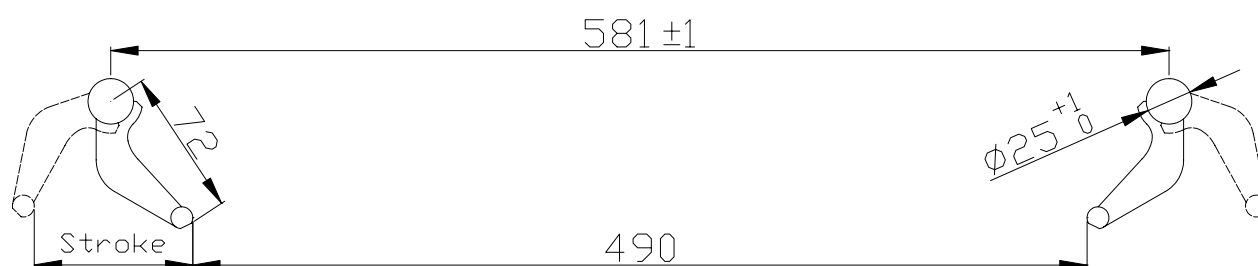
Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.



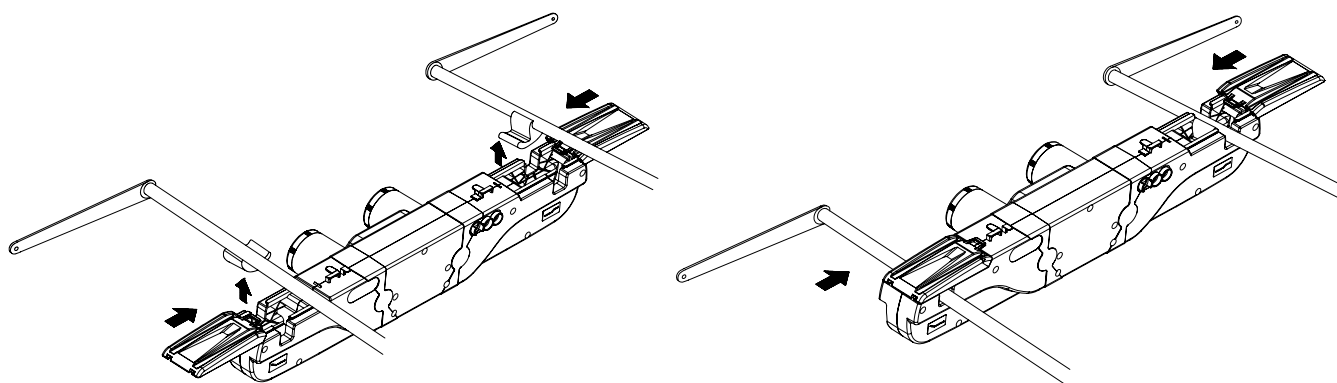
Drawing dimension :  
LA30



### Bed Frame Dimension



### Installation Instruction





LA35 has strong housing and special outer shape with strong structure. It has complete functions and can be used in high-loaded environment. For example, dental chairs, hospital beds, sport equipment, etc.. Its applications can be widely used.

**Feature :**

- 24V permanent magnet motor
- Thrust 4000N~8000N
- Built-in end stop signal switches ( not adjustable )
- Stroke length : 10cm 、 15cm 、 20cm
- The outside tunnel is aluminum material; inside tunnel is stainless material with low friction and high quality.
- Elegant and compact design; small installation dimension
- Duty cycle: Max. 10% or 2 min./ 18min. in continuous use
- Ambient temperature: +5°C to +40°C
- Color : Black

**Option :**

- Back fixture position 0° or 90° and can choose strong-type solid tailstock
- Reed switch can combine CB05 、 CB24 、 CB28
- Rod eye can be groove
- Protection level : IP66
- Can install Hall Sensor function (Contact R & D department of LINKAN A/C first)

# LA35 Ordering Example :

LA35. 3 M R - 10 - 100 - R H D

Plug ( Select plug that fit with control box )

D : DIN ( Standard )

J : Jack

X : Without Plug

Back Fixture Direction ( Direction Installation of actuators )

H : Horizontal

V : Vertical

A : Horizontal + Solid (800Kg)

B : Vertical + Solid (800kg)

Rod Eye Direction

R : Groove

S : Standard

Cable Length

100 = 100cm

150 = 150cm

200 = 200cm

Stroke

10 = 10cm

15 = 15cm

20 = 20cm

Reed Switch

R: As the worm wheel gear rotate one cycle, Read Switch sends out 4 signals (pulses). R can let control box to read signal and run memorizing and positioning control

H : Unipolar Hall Sensor

T : Bipolar Hall Sensor

Safety Nut M (Can avoid that screw on the spindle break down and then do downward movement safely)

Pitch

3 : 3 mm (Large thrust type)

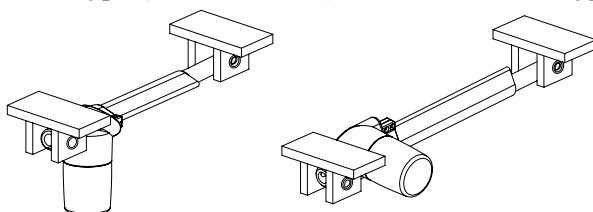
6 : 6 mm (Fast type)

Actuator LA35 Standard type

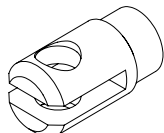
## Back Fixture Direction ( The direction of Actuator installation ) :

V type (Vertical install)

H type (Horizontal install)



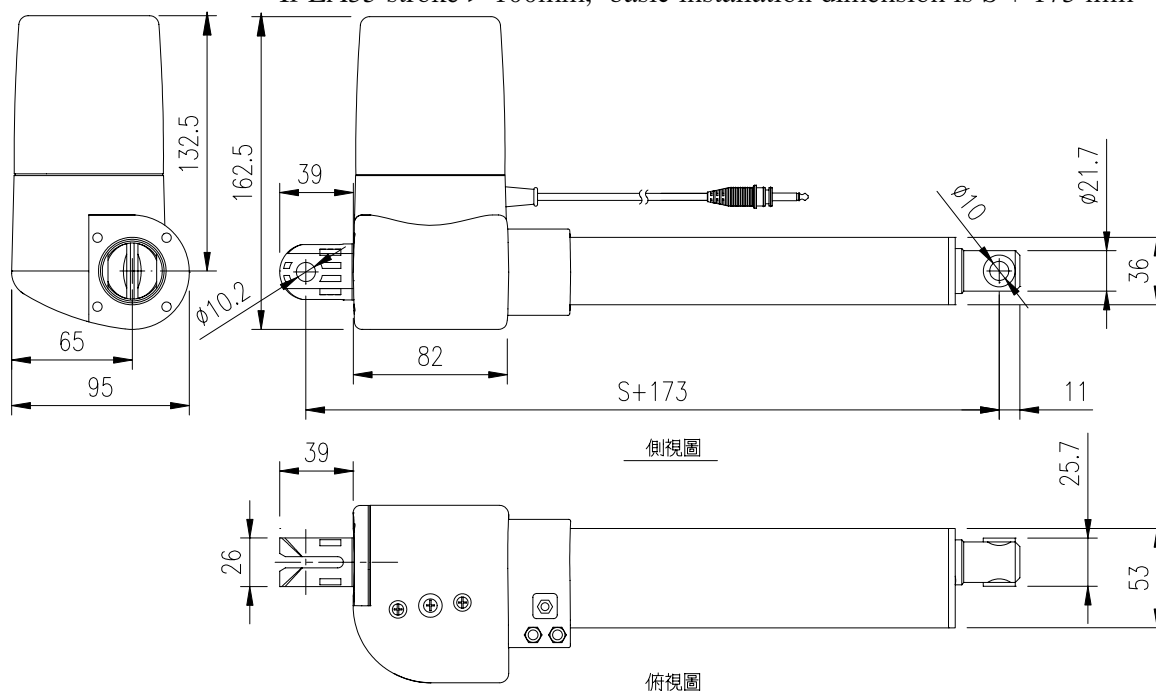
Rod Eye Type: (Front Install Head) Option of additional accessory " R " is "Groove" type



## Dimension :

### Installation Dimensions :

If LA35 stroke > 100mm, basic installation dimension is S + 173 mm



## LA35 Installation Dimension

Actuator Stroke mm	100	150	200
Basic Installation Stroke mm	288	323	373
Stretch Stroke mm	388	473	573

※200mm above stroke need to discuss with technical department of LINKAN A/S

Data & Graph:

Spindle type	Spindle Pitch (mm)	Max Load 【N】		Amp.	Speed 【mm/s】		Max. Self lock 【N】	Voltage
		Push	Pull	Full Load	Unloaded	Full load	Push	
LA35.3	3	8000	4000	4.8A	4.5	3	8000	DC24V
LA35.3	3	8000	4000	4.8A	6	4.5	8000	DC30V
LA35.6	6	4000	4000	4.6A	9.3	5.7	4000	DC24V
LA35.6	6	4000	4000	4.6A	12	8	4000	DC30V

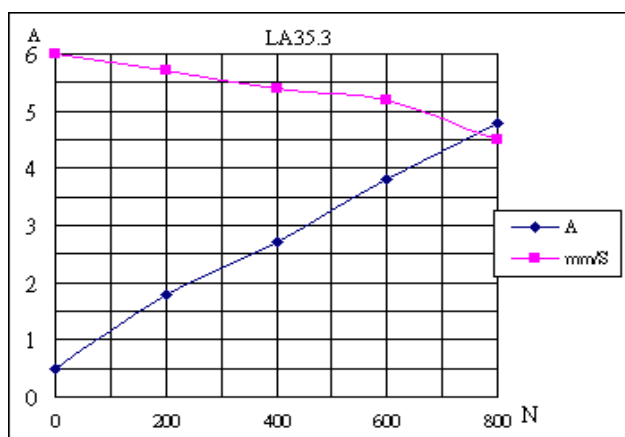
(Duty cycle : 10% )

※ The data above is based on the test of the power supply. If you need the data with compatible control boxes, please contact LINKAN A/C technical department.

## POWRE SUPPLY DC33V

### LA35.3

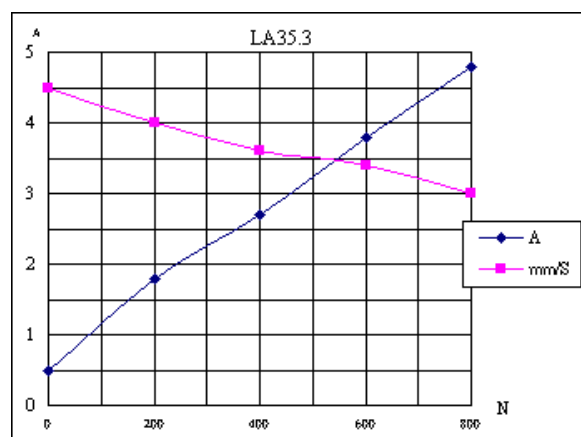
LOAD(kg)	A	SPEED(mm/s)
0	0.5	6
200	1.8	5.7
400	2.7	5.4
600	3.8	5.2
800	4.8	4.5



## POWRE SUPPLY DC24V

### LA35.3

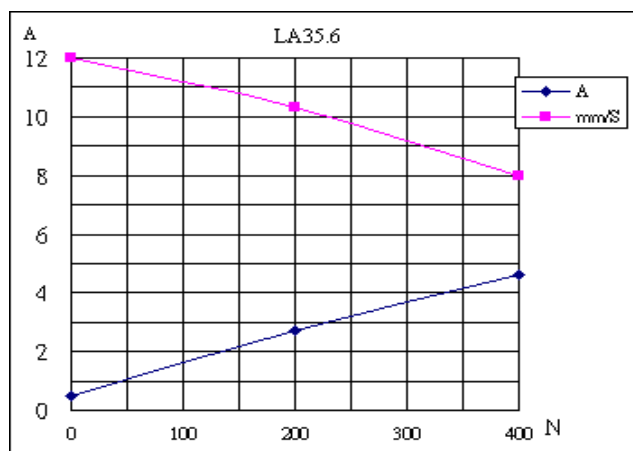
LOAD(kg)	A	SPEED(mm/s)
0	0.5	4.5
200	1.8	4
400	2.7	3.6
600	3.8	3.4
800	4.8	3



## POWRE SUPPLY DC33V

### LA35.6

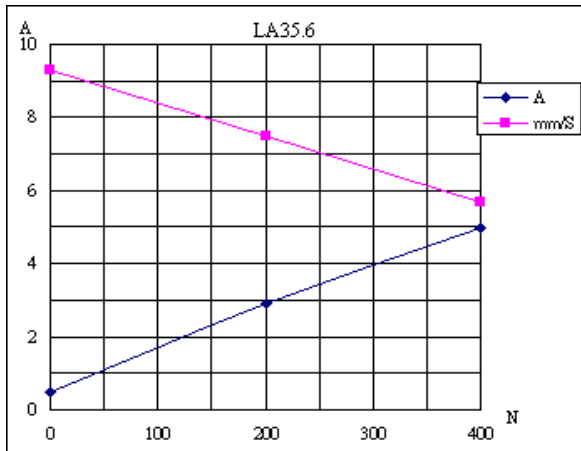
LOAD(kg)	A	SPEED(mm/s)
0	0.5	12
200	2.7	10.3
400	4.6	8



## POWRE SUPPLY DC24V

### LA35.6

LOAD(kg)	A	SPEED(mm/s)
0	0.5	9.3
200	2.9	7.5
400	5	5.7



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## 4 Control Box

### 4-1 CB02



CB02 can operate up to 3 actuators. The simple compact and elegant design makes the control box ideal for use in beds, chairs, tables and other applications; it has remote control function and the competitive price.

#### Features:

- Connecting up to 3 actuators. Actuator type: LA31, LA32, LA33 (with Jack Plug)
- Compatible with HB8X, HB3X, FS, FLS series
- Elegant design
- Power indicator light
- Mains voltage: 220-240/ 100-120V AC; 50-60HZ
- Output voltage: 24V DC
- 8 PIN DIN-plug for handset
- 1.8m straight cable
- Duty cycle: Max. 5% or 3 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP51
- Color: black
- Remote control

#### Options:

- Protection class: IP66
- Color: Gray-White (Min. order 1,000pcs)

# **CB02 Ordering Example:**

**CB02 S. 3 - 2EU - 22**

**MAINS VOLTAGE** ( Input Mains Voltage )

10 = 100V

11 = 110V

12 = 120V

22 = 220V

**COLOR**

- : Black

+ : Gray-white

**CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

**NO. OF CHANNELS** ( The No. of Actuator )

1 : 1 CHANNEL

2 : 2 CHANNELS

3 : 3 CHANNELS

**FUNCTION**

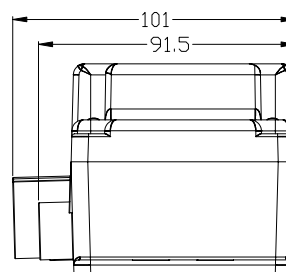
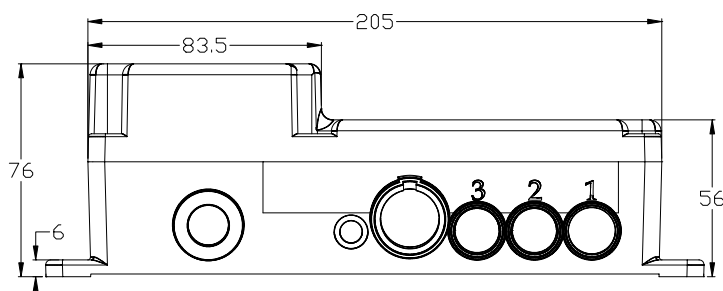
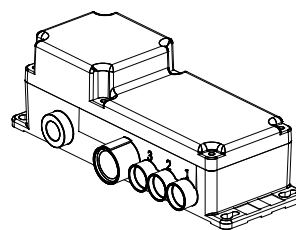
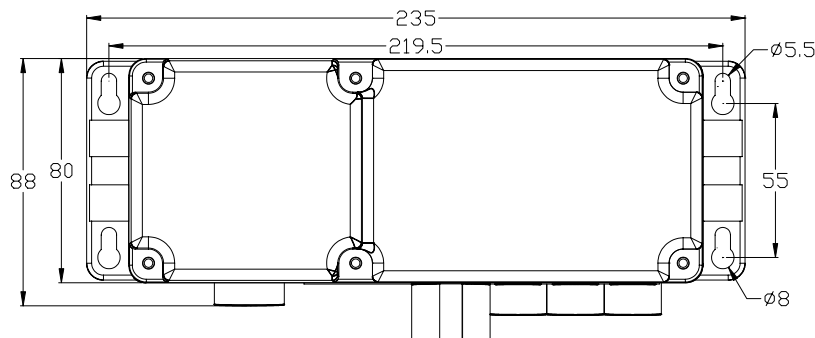
S : STANDARD

B : BASIC

**CONTROL BOX TYPE** CB02-STANDARD

## **Dimensions:**

(Plugs on CB02 are Jack Plug)



## **Notice:**

★ CB02 only can control Max. 2 actuators when using HB63R & S remote control function. Ex. CB02S..2-2EU-22

★ CB02 has to be used with actuators with Jack Plug.

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**4-2 CB05****Transformer TR05**

The new CB05 is a very compact design with easy installation in various applications, particularly for dental chair, gynecological table and beauty chair. This design consists of two parts: a controller CB05 and an independent exterior power supply TR05. It is compatible with low voltage electrical components, through AC 29V mains cable.

**Features:**

- Connected with up to 2 actuators: LA31, LA32; required to connect with DIN-plug
- 3 memory positions
- Over load protection
- Independent and compact power supply (transformer) TR05, only requiring min. power consumption with low EMC
- Special interface technology and assistant device for high stability to prevent shut down or memory lost.
- Can combine with HB8X, HB3X and FS series to use FLS.
- Mains voltage: 220-240/ 100-120V AC; 50-60Hz
- TR05 has a temperature fuse; fuse not for exchangeable
- Duty cycle: Max. 10% or 6 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection Class: IP51
- Color: black

**Options:**

- Release function: Actuator back to original position
- Return Function: Actuator back to previous position





### CB05 Ordering Example:

**CB05. 1 - A**

**FUNCTION**

A: RELEASE (Actuator back to original position)

B: RETURN (Actuator back to previous position)

**NO. OF CHANNELS**

1 : 1 CHANNELS

2 : 2 CHANNELS

**CONTROL BOX TYPE** CB05-STANDARD

(Plugs on CB05 are Din Plug)

### TR05 Ordering Example:

**TR05 - 2UL - 12**

**MAINS VOLTAGE**

10 = 100V

11 = 110V

12 = 120V

22 = 220V

**CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

**EXTERIOR POWER SUPPLY TYPE** TR05-STANDARD



- ★ Only used with LA31 and LA32 actuator with built-in reed switch R.
- ★ CB05 is only used with actuator with Din Plug



CB12 is a low voltage control box with advanced technology. CB12 can control up to 3~4 actuators. A series of built-in safety and other options makes it ideal for the applications with both manual and electrical operation.

**Features:**

- Max. for 3~4 actuators: Actuator type: LA36 、 LA37 (with Jack plug)
- Mains voltage: 220-240/ 100-120V AC; 50-60Hz
- Dual output voltage (Low load: Low voltage; High load: High voltage)
- Compact high power toroidal transformer ensures low power consumption and low electromagnetic emission
- Electronic overload protection (EOP) common for all channels
- DIN socket for handset HB8X, ACP or FS, FLS
- Exchangeable mains cable
- Duty cycle: Max. 10% or 6 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: black

**Options:**

- Class 1: earth connection
- Mains fuse can be replaced from the out-side
- Protection class: IP66
- Built-in T-cable device needed for operating two handsets simultaneously
- Battery back-up: battery sets (BA16)

# **CB12 Ordering Example:**

**CB12. 3 E F - 2EU - 22 B**

**BATTERY CHARGER**

**MAINS VOLTAGE** (Input Mains Voltage)

10 = 100V

11 = 110V

12 = 120V

22 = 220V

**CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

3EU : 3P, STRAIGHT, EU CABLE

3UL : 3P, STRAIGHT, UL CABLE

3UK : 3P, STRAIGHT, UK CABLE

3AUS : 3P, STRAIGHT, AUS CABLE

**MAINS FUSE F**

**EARTH CONNECTION E**

**NO. OF CHANNELS**

1 : 1 CHANNEL

2 : 2 CHANNELS

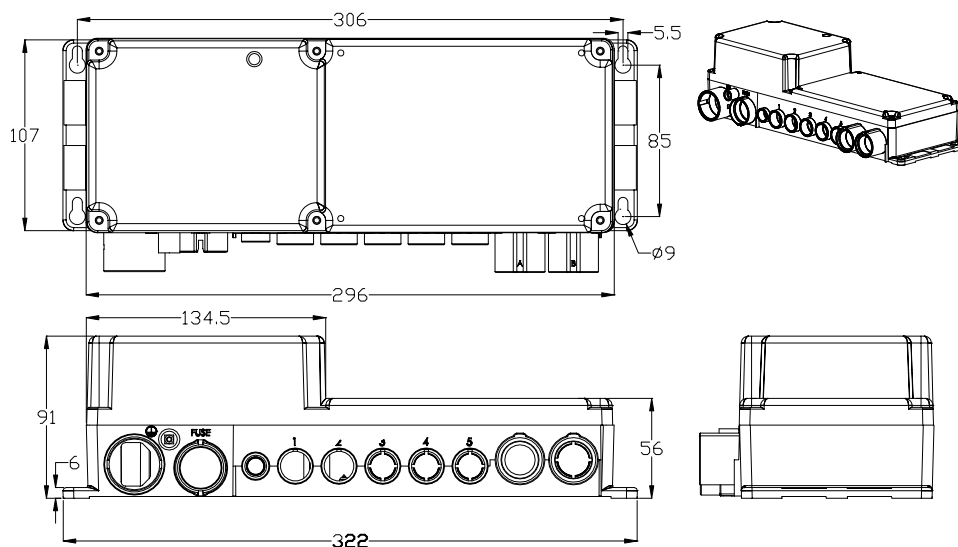
3 : 3 CHANNELS

4 : 4 CHANNELS

**CONTROL BOX TYPE CB12-STANDARD**

## **Dimensions:**

(Plugs on CB12 are Jack Plug)



## **Notice:**

- ★ Only used with LA36, LA37 actuators with Jack Plug
- ★ Built-in T-cable device needed when operating two handsets simultaneously or one handset and one ACP simultaneously

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## 4-4 CB16



CB16 is a low voltage control box that can control up to 4 actuators. A series of built-in safety and other options makes it ideal for vast medical and industrial applications.

### Features:

- Max. for 4 actuators. Actuator type: LA31, LA32, LA33 (with Jack Plug)
- Mains voltage: 220-240/ 100-120V AC; 50-60Hz
- Dual output voltage (Low load: Low voltage; High load: High voltage)
- Compact high power toroidal transformer ensures low power consumption and low electromagnetic emission
- Electronic overload protection (EOP) common for all channels
- DIN socket for handset HB8X, HB3X, ACP or FS
- Exchangeable mains cable
- Duty cycle: Max. 10% or 6 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: Black
- Can be mounted with BA16

### Options:

- Battery back-up: battery sets (BA16)
- Battery alarm indicates low battery charge with a buzzer
- Class 1: earth connection
- Mains fuse can be replaced from the out-side
- Protection class: IP66
- Built-in T-cable device for operating two handsets simultaneously

# **CB16 Ordering Example:**

**CB16. 3 E F - 2UL - 22 B**

## **BATTERY CHARGER**

B : BATTERY CHARGER

T : TRANSFORMER

## **MAIN VOLTAGE** (Input mains voltage)

10 = 100V

11 = 110V

12 = 120V

22 = 220V

## **CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

3EU : 3P, STRAIGHT, EU CABLE

3UL : 3P, STRAIGHT, UL CABLE

3UK : 3P, STRAIGHT, UK CABLE

3AUS : 3P, STRAIGHT, AUS CABLE

## **MAINS FUSE F**

## **EARTH CONNECTION E**

## **NO. OF CHANNELS**

1 : 1 CHANNEL

2 : 2 CHANNELS

3 : 3 CHANNELS

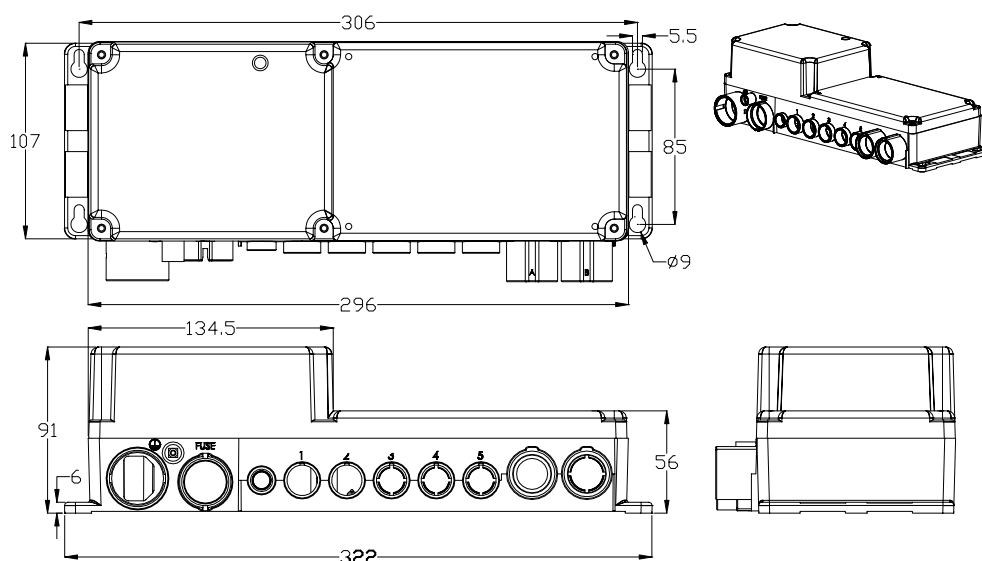
4 : 4 CHANNELS

## **CONTROL BOX TYPE CB16-STANDARD**

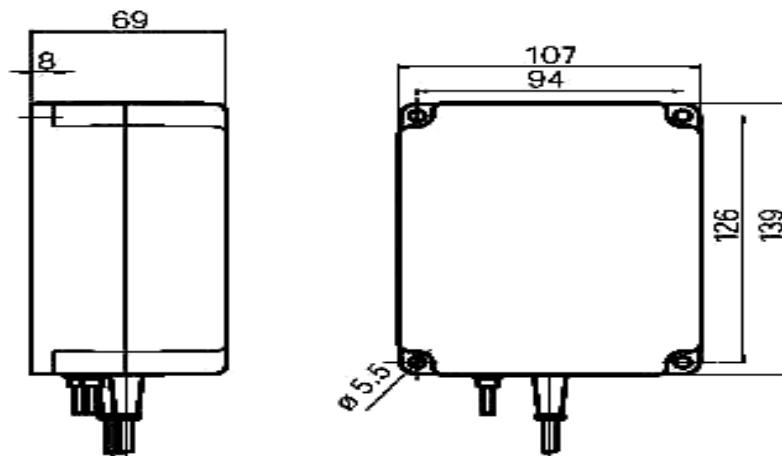
(Plugs on CB16 are Jack Plug)

## **Dimensions:**

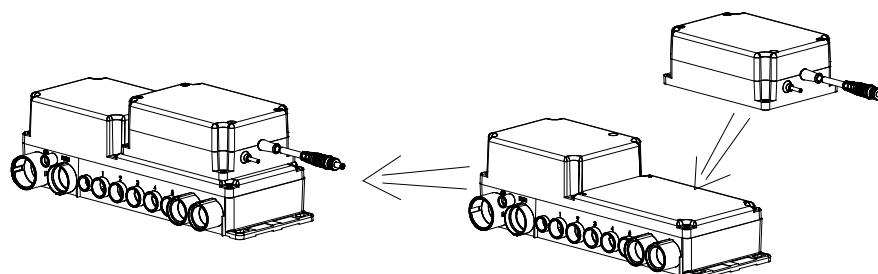
CB16



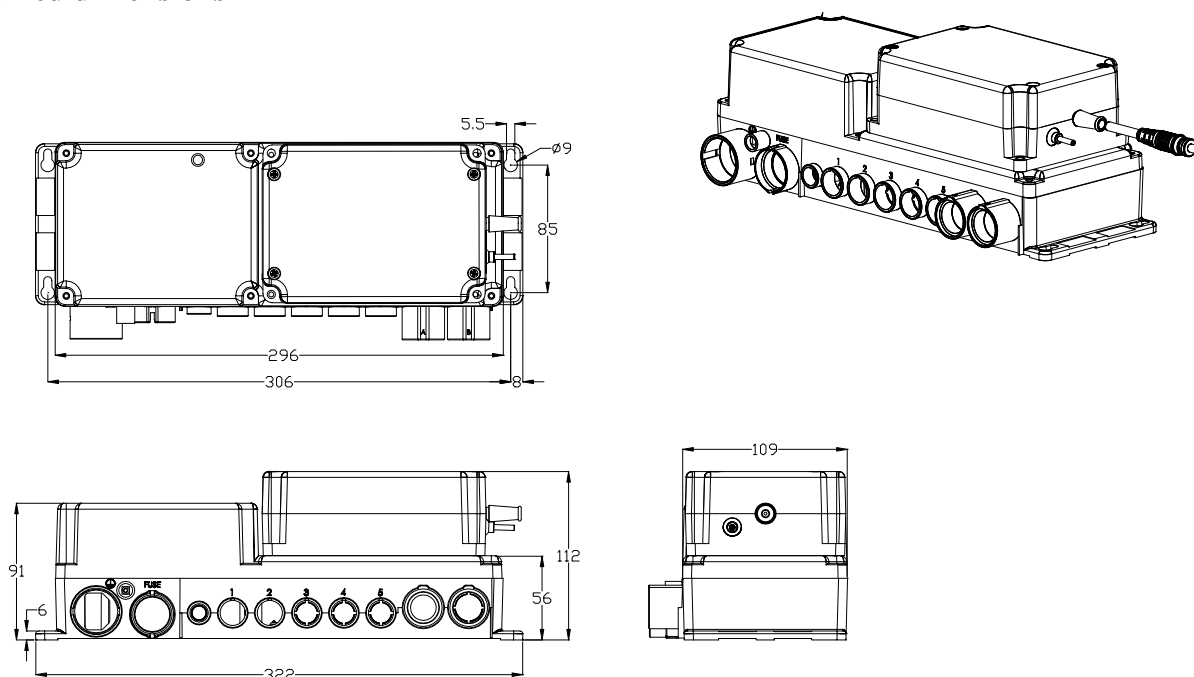
Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.



CB16 combined with BA16



**Combined dimensions :**



**Notice:**

- ★ CB16 has to use actuators with Jack Plug, such as, LA31, LA32, and LA33.
- ★ Built-in T-Cable device needed when operating two handsets simultaneously or one handset and one ACP simultaneously.
- ★ BA16 consists of 2 pcs DC12V 1.2Ah batteries

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## 4-5 CB22



CB22 is a special controller for reverse beds; it has low voltage feature and can control up to 4 actuators. A series of built-in safety and other options makes it ideal for vast medical and rehabilitation applications.

### Features:

- Connection for up to 4 actuators. Actuator type: LA31 、 LA32 (Jack-Plug)
- Mains voltage: 220-240/ 100-120V AC; 50-60Hz
- Dual output voltage (Low load: Low voltage; High load: High voltage)
- Compact high power toroidal transformer ensures low power consumption and low electromagnetic emission
- Electronic overload protection (EOP) common for all channels
- Special interface technology and assistant device to ensure high stability and prevent shutting down or memory lost.
- Operational indicator light and warming buzzer largely increases the safety during working.
- Advanced technology, automatic sleeping & wake-up device and low power consumption ensure long time operation while power is off
- DIN Plug socket for handset HB8X, ACP or FS
- Exchangeable mains cable
- Duty cycle: Max. 10% or 6 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: Black
- Can be mounted with BA16

### Options:

- Transmitter for reverse beds
- Mains fuse can be replaced from the outside
- Battery back-up: BA16; audio battery alarm indicates low battery charge
- Protection class IP66
- Class 1: Earth connection
- Built-in T-cable device needed for operating two handsets simultaneously



# CB22 Ordering Example:

**CB22 R . 3 E F - 2UL - 22 B**

**BATTERY CHARGER**

B : BATTERY CHARGER

**MAINS VOLTAGE**

10 = 100V

11 = 110V

12 = 120V

22 = 220V

**CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

3EU : 3P, STRAIGHT, EU CABLE

3UL : 3P, STRAIGHT, UL CABLE

3UK : 3P, STRAIGHT, UK CABLE

3AUS : 3P, STRAIGHT, AUS CABLE

**MAINS FUSE F**

**EARTH CONNECTION E**

**NO. OF CHANNELS**

1 : 1 CHANNEL

2 : 2 CHANNELS

3 : 3 CHANNELS

4 : 4 CHANNELS

**FUNCTION**

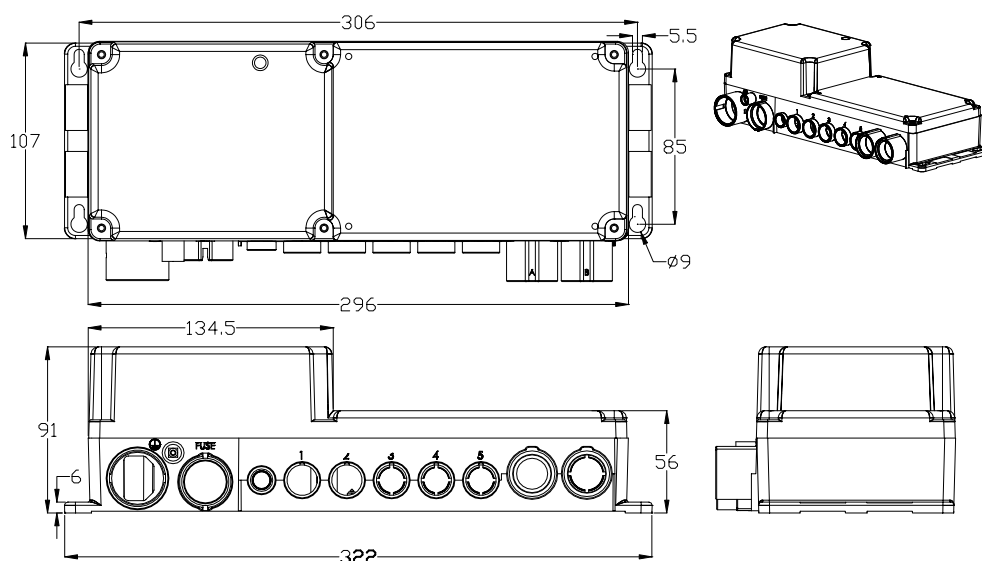
R : TILTING (Reverse Bed)

**CONTROL BOX TYPE CB22-STANDARD**

## Dimensions:

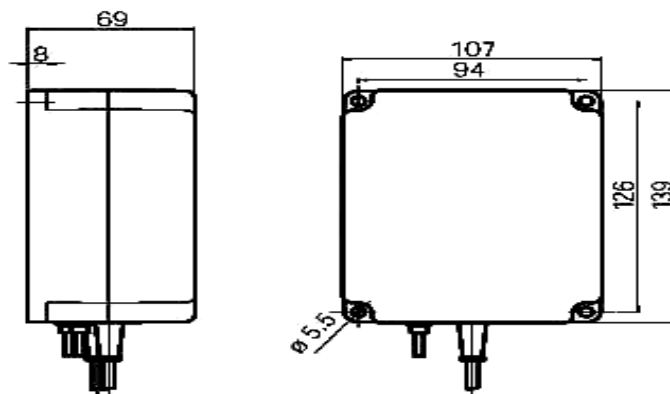
CB22

(Plugs on CB22 are Jack Plug)

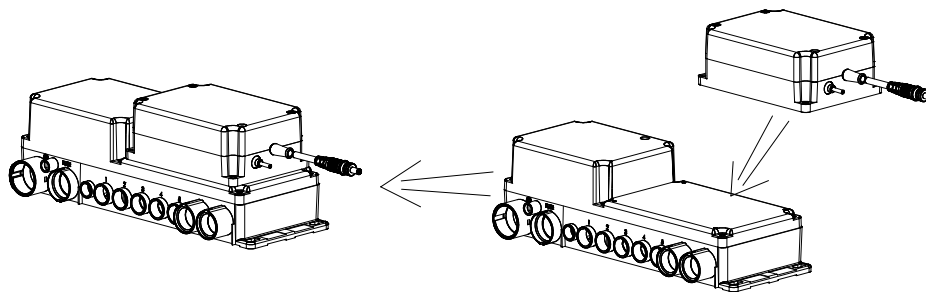


Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

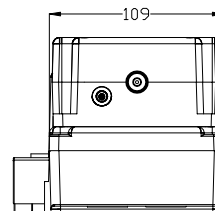
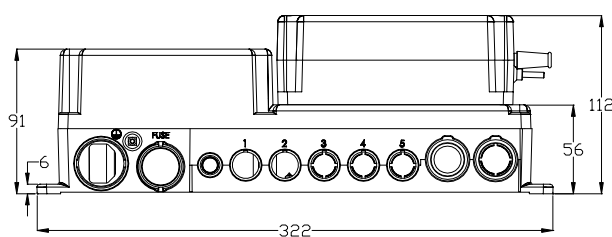
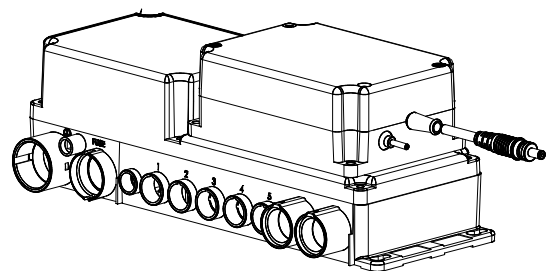
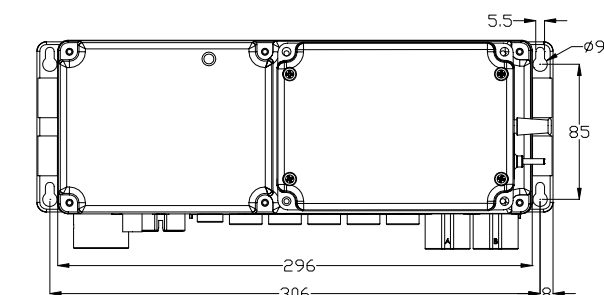
## BA16



CB22 combine with BA16



**Combined dimensions :**



### Notice:

- ★ Only for reverse beds system. Actuators for reverse function need 100mm stroke. In addition, CB22 has to use transmitter simultaneously
- ★ Only used with LA31 and LA32 actuators with Jack Plug.
- ★ BA16 consists of 2 pcs DC12V, 1.2Ah batteries

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CB07 is a low voltage operated controller for max. 3~4 actuators. The high power toroidal transformer and special circuit design makes CB07 ideal with LA37.

**Features :**

- Max. for 3~4 actuators ( Depend on different type of actuator )
- Mains voltage: 220V~240V/100~120V AC ; 50/60 Hz
- Compact high power toroidal transformer ensures low power consumption and low electromagnetic emission
- DIN socket for handset HB8X 、HB3X 、ACP or FS
- Exchangeable mains cable
- Duty cycle: Max. 10% or 6 min./ 1hour in continuous use
- Ambient temperature : +5°C to +40°C
- Protection class : IP51
- Color : Black

**Options :**

- Class 1: earth connection
- Mains fuse can be replaced from the outside
- Protection Class : IP66
- Color: Gray-White (Min. Order: 1,000 pcs)
- T-cable device needed when operating two handsets simultaneously
- N for the use of LA31 、LA32 、LA33
- S for the use of LA37



### CB07 Ordering Example :

CB07. 3 E F - 2EU - 22 S

#### FUNCTION

N : For LA31, LA32, LA33

S : For LA37

#### MAINS VOLTAGE

10 = 100V

11 = 110V

12 = 120V

22 = 220V

#### COLOUR

— : Black

— : Gray-white

#### CABLES

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UK : 2P, STRAIGHT, UK CABLE

2UL : 2P, STRAIGHT, UL CABLE

2AUS : 2P, STRAIGHT, AUS CABLE

3EU : 3P, STRAIGHT, EU CABLE

3UL : 3P, STRAIGHT, UL CABLE

3IN : 3P, STRAIGHT, IN CABLE

3UK : 3P, STRAIGHT, UK CABLE

3AUS : 3P, STRAIGHT, AUS CABLE

#### MAINS FUSE F

#### EARTH CONNECTION E

#### NO. OF CHANNELS

1 : 1 CHANNEL

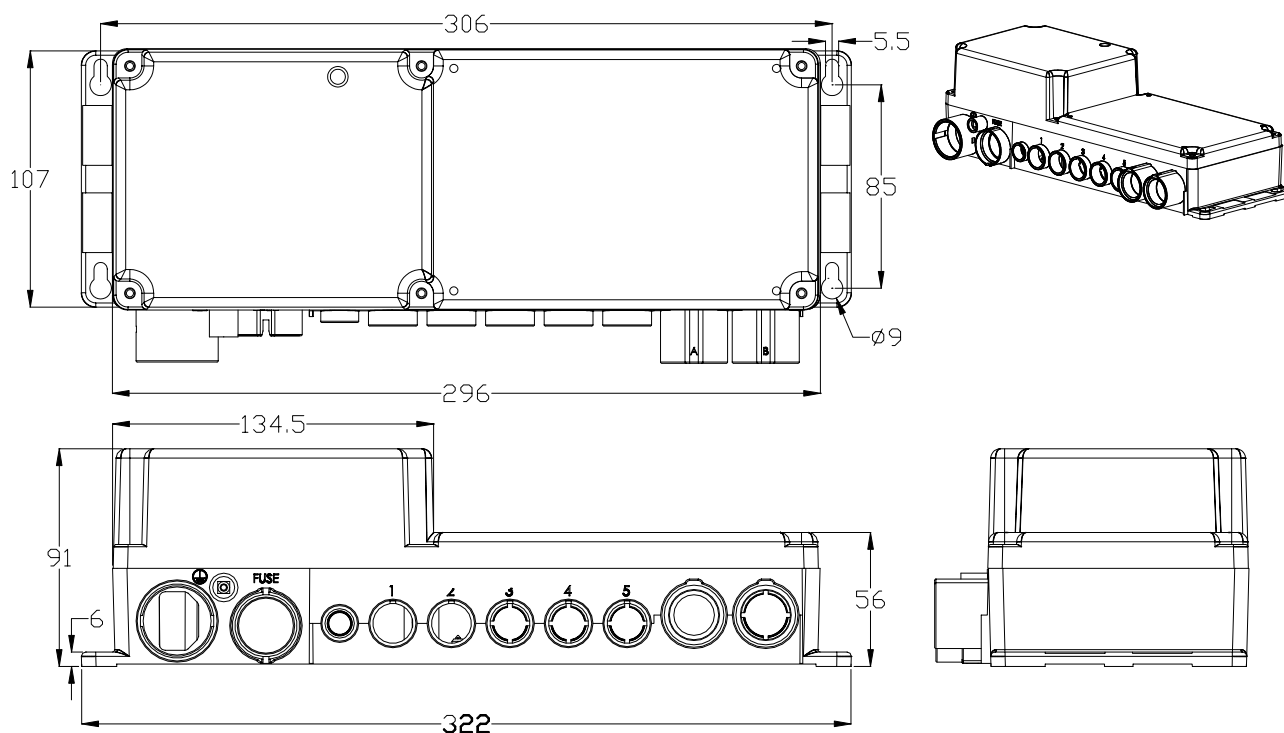
2 : 2 CHANNELS

3 : 3 CHANNELS

#### CONTROL BOX TYPE CB07-STANDARD

(Plugs on CB07 are Jack Plug)

## Dimensions:



## Notice:

- ★ Only used with actuators with Jack Cable.
- ★ Can not used with ACP simultaneously
- ★ Can not use battery



CB06 can operate up to 3 actuators. It has the feature of being mounted with LA33. It has elegant design suitable for the use of beds, chairs, and tables. It is suitable for being installed in less-spaced place and device of single function. It also has features of cheaper price.

**Features:**

- Max. for 3 actuators. Actuator type: LA33
- Can combine with HB8X、HB3X and FS series to use FLS
- Elegant design
- Power indicator light
- Mains voltage: 220-240/ 100-120V AC; 50-60HZ
- Output voltage: 24V DC
- 8 PIN DIN-plug for handset
- 1.8m straight power cable
- Duty cycle: Max . 5% or 3 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP51
- Color: Black

**Options:**

- Protection class: IP54

# **CB06 Ordering Example:**

CB06 . 1 - 2EU - 22

**MAINS VOLTAGE** (Input Mains Voltage)

10 = 100V

12 = 120V

22 = 230V

**CABLES**

2EU : 2P, STRAIGHT, EU CABLE

2JP : 2P, STRAIGHT, JP CABLE

2UL : 2P, STRAIGHT, UL CABLE

2UK : 2P, STRAIGHT, UK CABLE

2AUS : 2, STRAIGHT, AUS CABLE

**NO. OF CHANNELS** (The No. of actuator)

1 : 1 CHANNEL

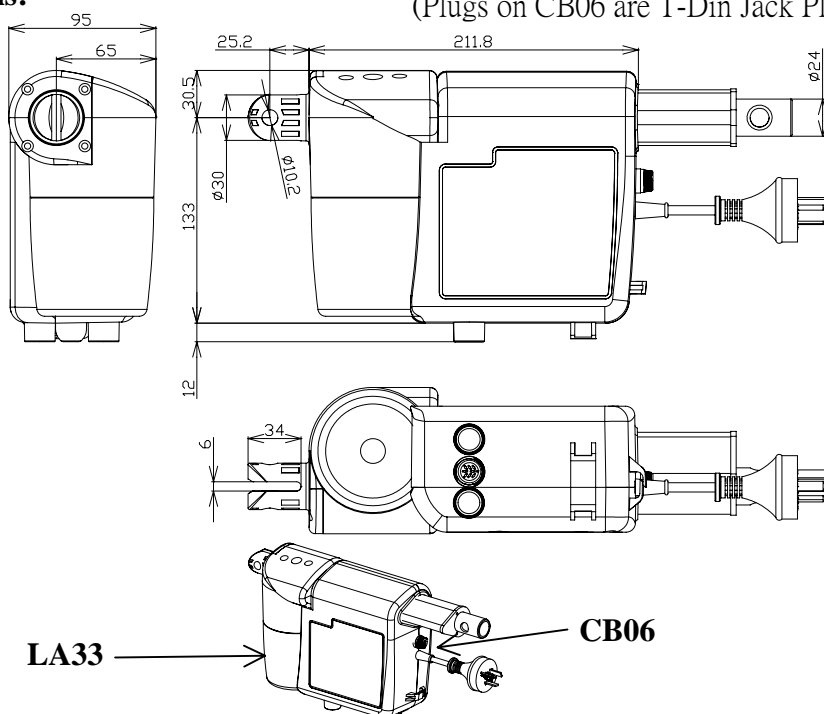
2 : 2 CHANNELS

3 : 3 CHANNELS

**CONTROL BOX TYPE 06- STANDARD**

## **Dimensions:**

(Plugs on CB06 are T-Din Jack Plug)



**LA33**

**CB06**

## **Notice :**

- ★ CB06 must be used with actuators with T-Din Jack Plug and 90° Din handset
- ★ 9V battery must use Alkaline battery
- ★ The design of 9V battery is designed to operate back, foot and the move down of the bed when electricity shortage happen.
- ★ Battery can not be long-term put in the control box to avoid running out of electricity or the leak of electrolyte to damage control box.

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## 4-8 CB09



CB09 is a low voltage operated controller for max. 4 actuators. A series of built-in safety and other options makes it ideal for vast medical and industrial applications.

### Features :

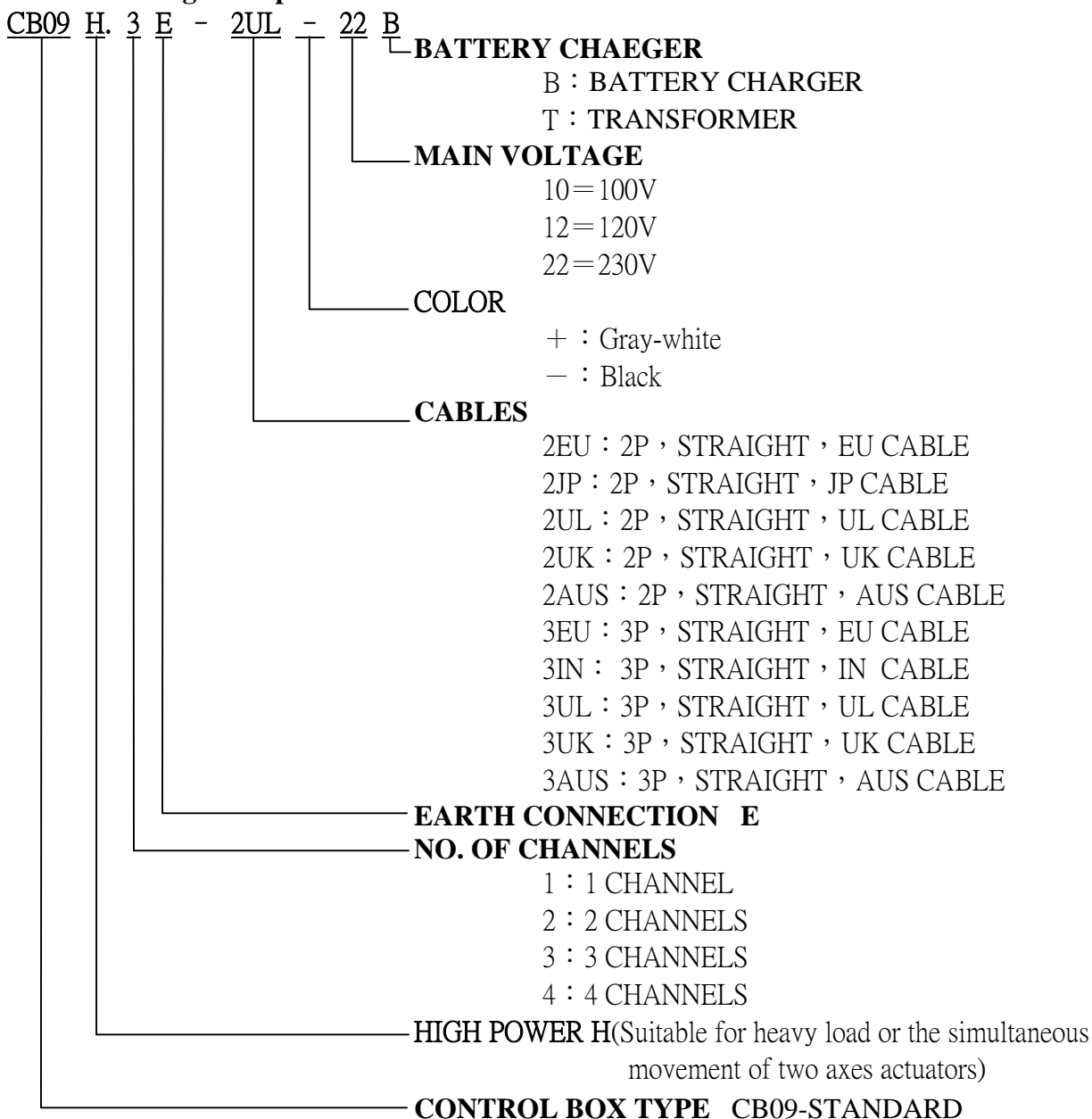
- Max. for 4 actuators. Actuator type: LA31 、 LA32 、 LA33 (with DIN Plug)
- Mains voltage: 220-240/ 100-120V AC; 50-60Hz
- Dual output voltage (Low load: Low voltage; High load: High voltage)
- Compact high power toroidal transformer ensures low power consumption and low electromagnetic emission
- Electronic overload protection (EOP) common for all channels
- DIN socket for handset HB8X 、 HB3X 、 ACP or FS
- Exchangeable mains cable
- Duty cycle: Max. 10% or 6 min./ 1 hour in continuous use
- Ambient temperature: +5°C to +40°C
- Protection class: IP54
- Color: Black
- Can be mounted with BA16

### Options :

- Battery back-up: battery sets (BA16)
- Battery alarm indicates low battery charge with a buzzer
- Class 1: earth connection
- Mains fuse can be replaced from the out-side
- Protection class: IP66
- T-cable device for operating two handsets simultaneously
- Color: Gray-White (Min. order 1,000 pcs)

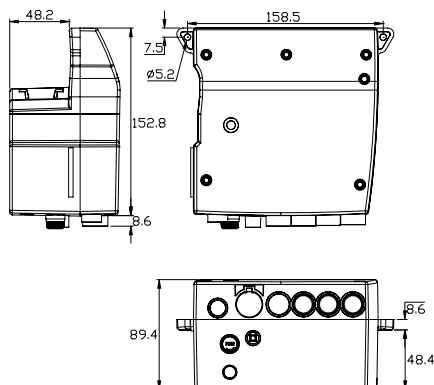


# **CB09 Ordering Example:**



## **CB09 Dimensions :**

(Plugs on CB09 are DIN Plug)



## **Notice :**

- ◆ CB09 has to use actuators with DIN Plug, such as, LA31, LA32, LA33.
- ◆ T-Cable device needed when operating two handsets simultaneously or one handset and one ACP simultaneously.
- ◆ BA16 consists of 2 pcs DC12V, 1.2Ah batteries.

Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## 4-9 CB28 Control Box for dental chair



CB28 is a controlling system for dental chairs. Its multi-functional controlling board with stepless-memorizing feature will make users easy to proceed output and input instructions by their requirements. This makes CB28 ideal for the system of dental chairs.

### Feature

- Control max. 2 actuators and controlling board (Rinse basin, water refilling, water heating, X-ray light, light for mouth)
- Multi-functional operating system with simplicity and convenience
- Mains voltage: 220~240V / 100~ 120V, 50/60 HZ
- High power, low electricity consumption, and low radiation provided by Built-in EI transformer
- Easy to change for external fuse
- Three-points memorizing function, positions for gargling, and the returning function
- Emergency safety lock
- Clear indicator light with warning sound
- Ambient temperature: +5°C ~ + 40°C
- Duty cycle: Max.10% or 2 min. / 18 min. in continuous use
- Protection class: IP54
- Color: Black

### Option

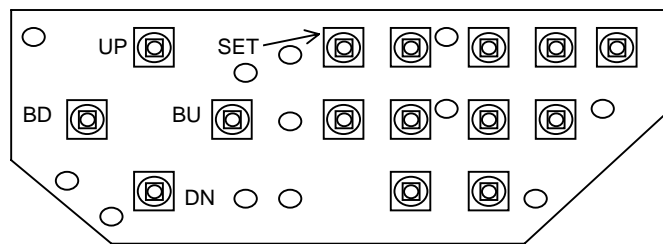
- Protection class: IP66
- Customized requirement for the adjustment of input and output function
- Color: Gray White

## Manual Guide

### 一、Seat Movement control

#### 1. Manual Control

Press "UP": Seat upward; Release "UP": Stop moving  
 Press "DN": Seat downward; Release "DN": Stop moving  
 Press "BU": Seat forward; Release "BU": Stop moving  
 Press "BD": Seat backward; Release "BD": Stop moving



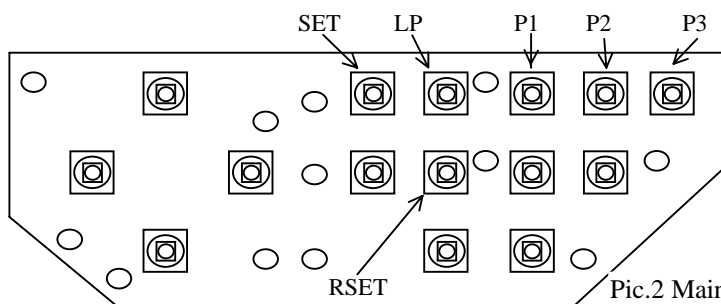
Pic.1 Main Operating board (Manual Height and Tilting Control)

#### 2. Foot Switch Control:

Functions from four buttons of foot switch are the same with main operating board above.

### 二、Memory positioning Control

Please finish setting up parameter first before proceeding automatic control. Please refer to each parameter setting.



Pic.2 Main operating board (Memory position control)

#### 1. Pre-set memory button control.

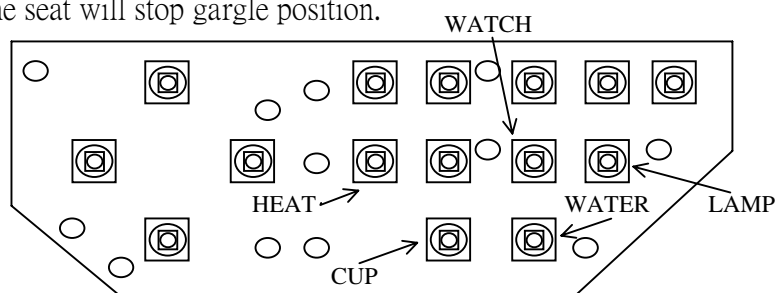
Press one of the keys (P1 P2 P3) and the seat will move to pre-set position automatically.

#### 2. Returning (Reset) button control

Press Reset button .The seat will move down to the lowest position and the seat back will move up to the highest position

#### 2. Gargling position control

The back will move up to the highest position when pressing gargling button. If press once again when proceeding, the seat will stop moving. Then press once again, the seat back will return to original position. If press any position button when moving, the seat will stop gargle position.



Pic. 3 Main Operating board (Other functions control)

#### 1. Gargling refill control

Press "Cup" and it will refill and stop according to time setting.

#### 2. Rinse basin control

Press "Water" and it will rinse the basin and stop according to time setting.

#### 3. Heating control

Press "Heat" to begin to heat. The indicator light will start to flash and stop automatically when it reaches the temperature already set. The water will be heated once again if the water temperature be down. Press "Heat" button again and it will stop heating and the indicator light will stop flashing.

#### 4. X-Ray light control

Press "Watch" and the X-Ray light will be turned on. Press it once again, the light will be turned off.

#### 5. Control for Light for mouth

Press "Lamp" to turn on the light for mouth. Press it once again, the light will be turned off.

## Parameter setting

---

### 一、Maximum seat position setting

1. Press Set button around twenty seconds and indicator light will be turned on and flash. Simultaneously, it will make buzzer sounds with long continuous sound.
2. Press "UP" and "BU" buttons separately to adjust the seat and seat back to the required position.
3. Press "Set" button again, the flashing frequency of indicator light and buzzer sounds will become fast. In this time, it can start to proceed the setting of the lowest position to the seat.
4. Press "DN" and "BD" buttons separately to adjust the seat and the seat back to the requirement position.
5. Press "Set" button and save the memory setting, the indicator light will be turned off and out of setting condition.

### 二、Pre-set memory button setting

1. Press "Set" button around 2 seconds and the indicator light will be turned on. Then it will enter setting condition.
2. Manual control adjusts the seat to required position.
3. Choose the required memory position and press the button. It can memorize three points (P1, P2, P3)
4. Press "Set" button and save the memory setting, the indicator light will be turned off and out of setting condition.

### 三、Refilling time setting

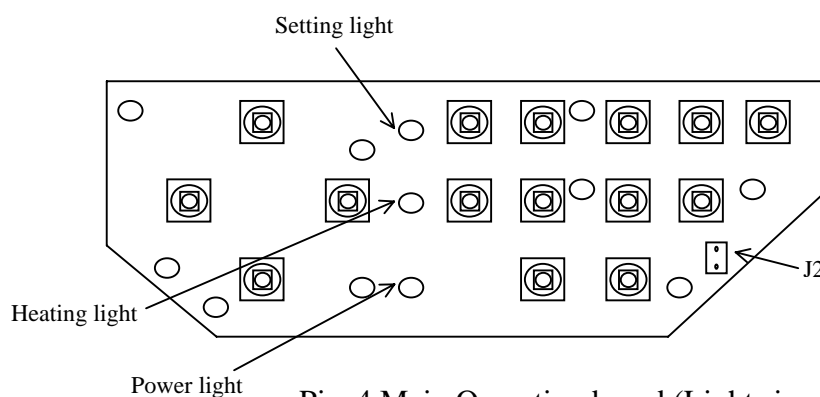
1. Press "Set" button around 2 seconds and the indicator light will be turned on and it can enter setting condition.
2. Press "Cup" button to refill up water manually according to time setting.
3. Press "Set" button once again and save the refilling setting. The indicator light will be turned off and out of setting condition.

#### 四、Rinsing basin time setting

1. Press “Set” button around 2 seconds. The indicator light will be turned on and it enters the setting condition.
2. Start to select time of rinsing basin.
  - (1) Press “Water” once and the buzzer will make short sound once. It means time setting for rinsing basin is 30 minutes.
  - (2) Press “Water” twice and the buzzer will make short sound twice. It means time setting for rinsing basin is 60 minutes.
  - (3) Press “Water” three times and the buzzer will make short sound three times. It means time setting for rinsing basin is long period.
  - (4) Press “Water” four times and the buzzer will make short sound four times. It means time setting for rinsing basin is 12 seconds. This situation is usually applied in the testing experiments.
3. Every rinsing setting starts from 30 minutes.
4. Choose the rinsing time, then press “Set” button once again and save the memory setting. The indicator light will be turned off and out of setting condition.
5. Recommend the rinsing time should depend on sounds from buzzers when setting time. This can avoid the wrong setting.

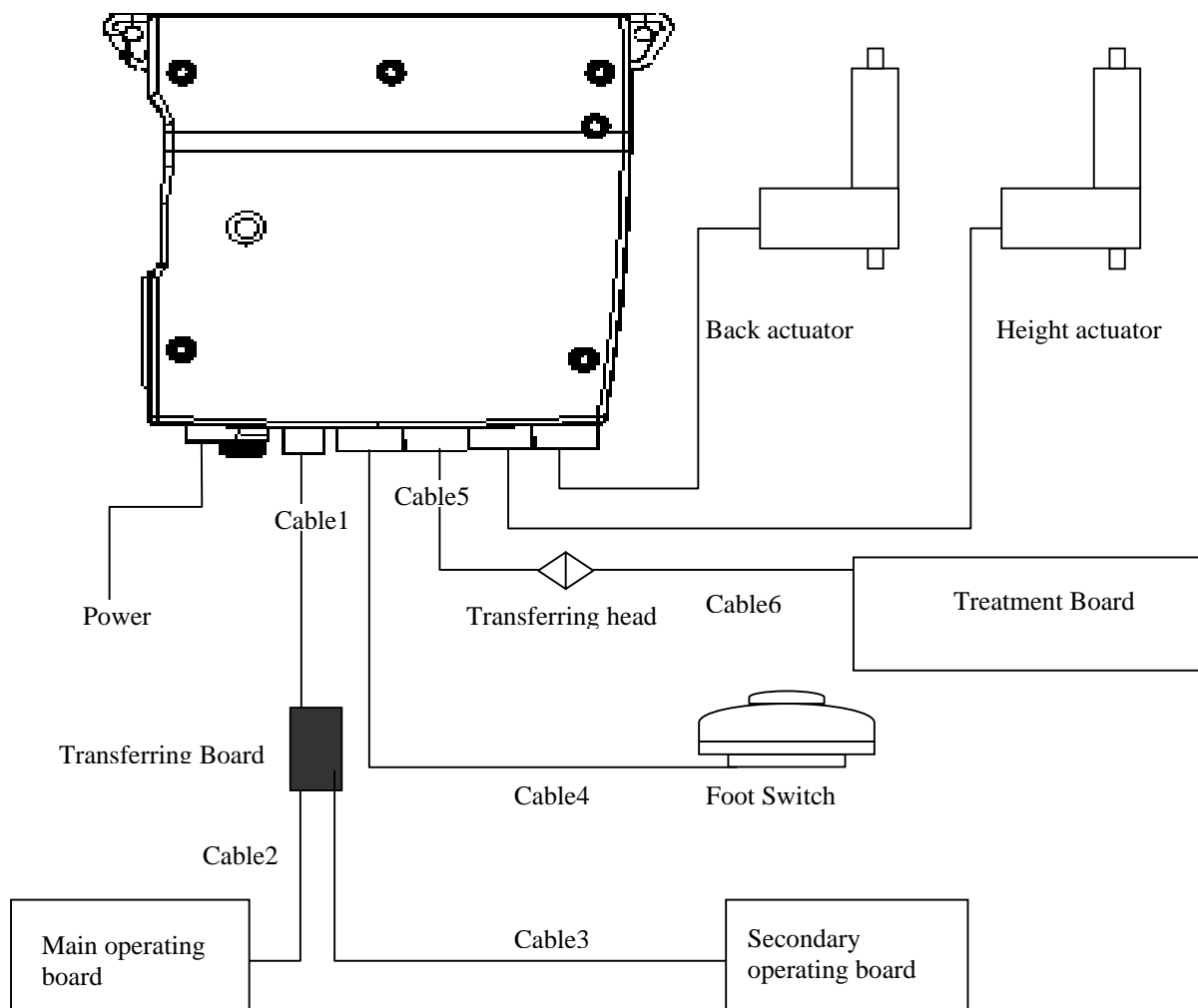
#### Caution:

1. The main operating board has 3 lights from top to bottom: Setting indicator light with green color, heating indicator light with red color, power indicator light with green color. The secondary operating board has heating indicator light with red color and power indicator light with green color.
2. J2 connection on the main operating board is short circuit connection. It can be used in the emergency stop when all buttons are out of order.
3. CN2 connection on Foot Switch is emergency safety lock. When it is short circuit, the seat back and the seat just can move upward but not downward.



Pic. 4 Main Operating board (Light signal & connection)

## Connection Demonstration:



## Accessory:



Cable1



Cable2



Cable3



Treatment Board



Cable4



Cable5



Cable6



Foot Switch



Main operating board



Secondary operating board

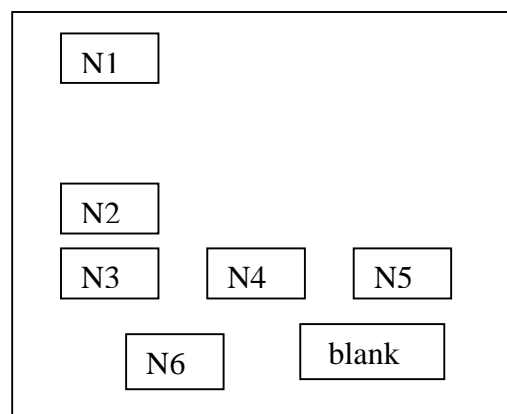


Transferring board

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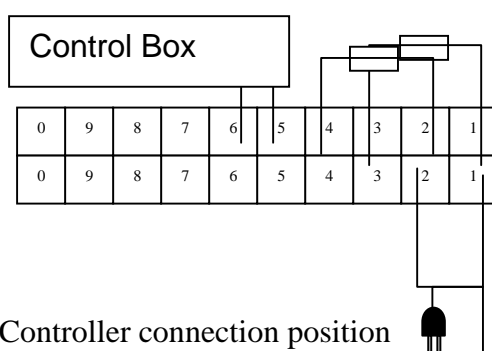
### Control board for treatment :

- N1 : Control box connection port
- N2 : X-Ray light cable
- N3 : AC220V cable, heating cable
- N4 : Cable for temperature Transmission and monitoring
- N5 : Cable for water supply, rinsing, and AC220V power
- N6 : Control cable for light for mouth.



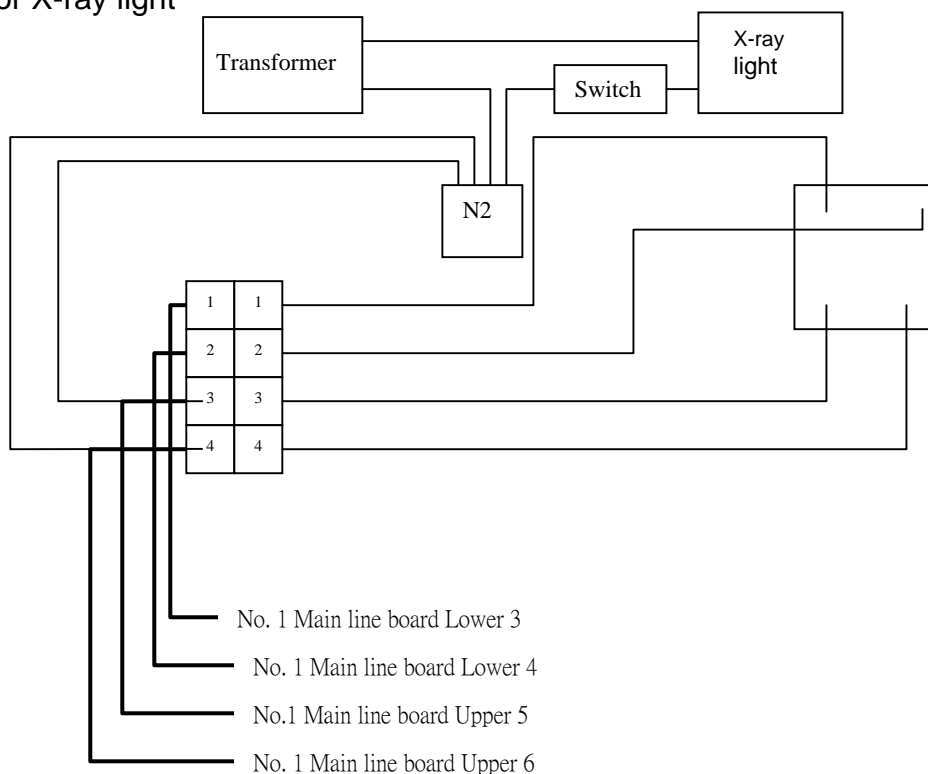
Pic.5 Treatment board connection position drawing

### Main line board

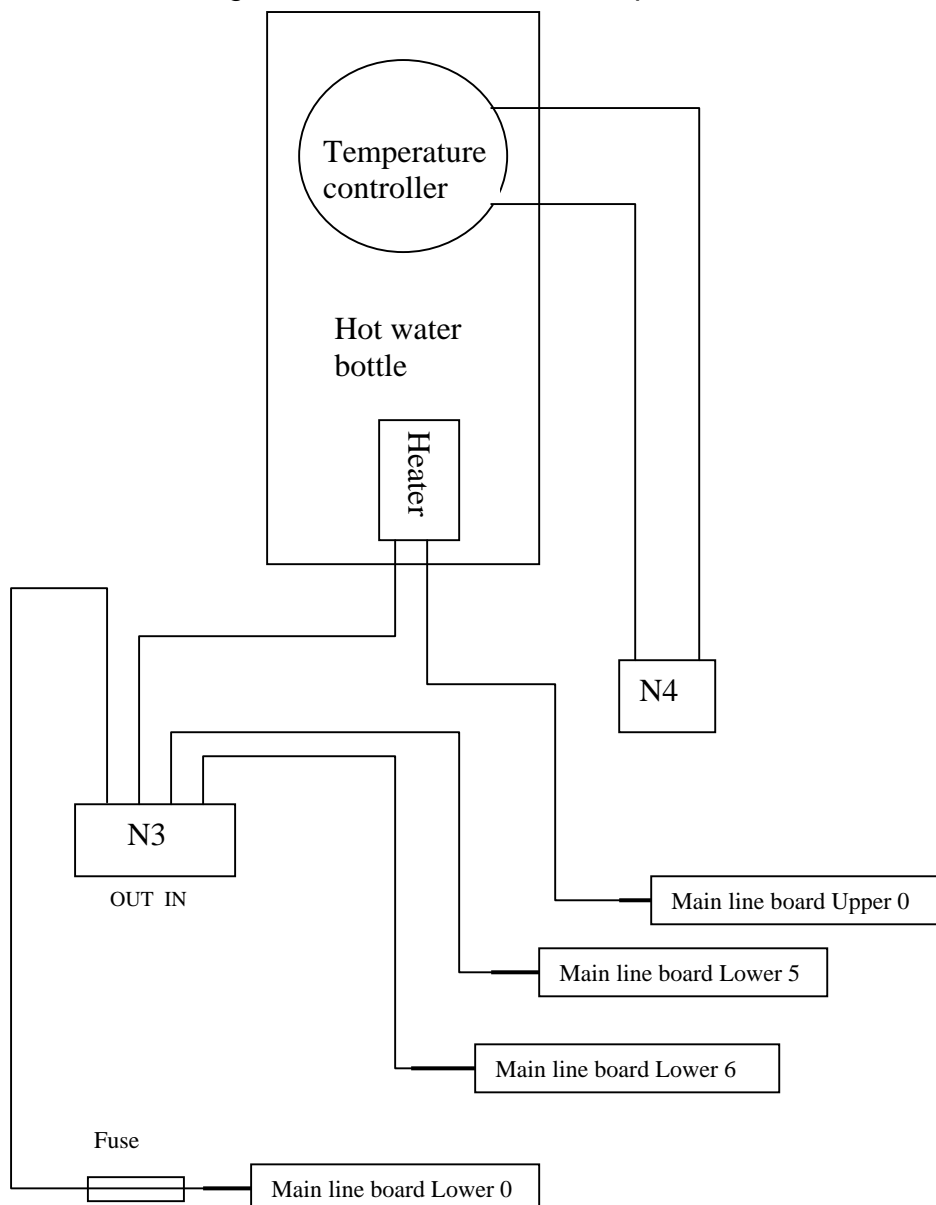


Pic. 6 Main Controller connection position

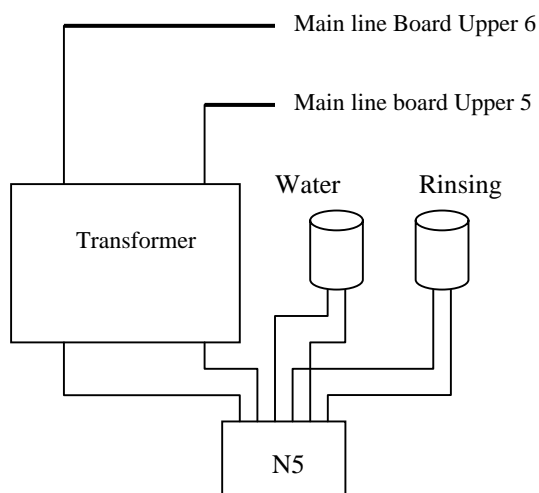
### N2 : Line for X-ray light



N3 : AC220V Cable , Heating cable & N4 : Cable for temperature Transmission



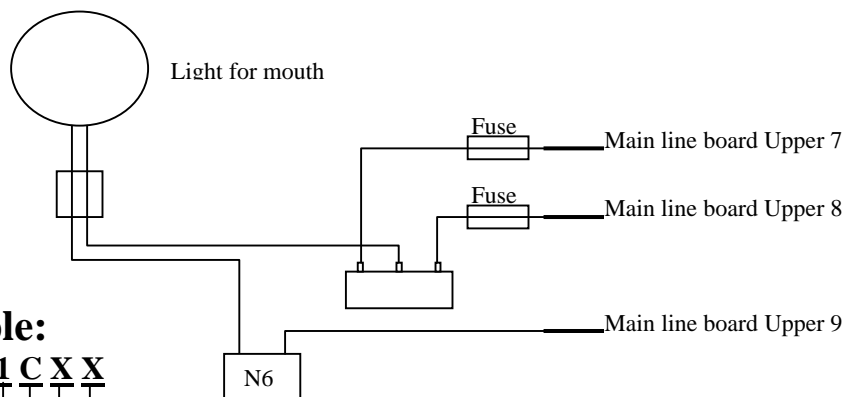
N5 : Water supply cable , Cable for rinsing basin , AC220V Power cable



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N6 : Control cable for light for mouth



### CB28 Ordering Example:

**CB28 M1 - 120 - L - 1 1 1 C X X**

Model Code

Customer Code

Nationality code

Foot Switch

0 : Two axes Foot Control Switch not required

1 : Foot Control Switch required

Secondary Operating Board

0 : Secondary operating board not required

1 : Secondary operating board required.

Main Operating Board

0 : Main operating board not required

1 : Main operating board required

Transfomer

L : for LA32 ( 66VA )

M : for LA33 ( 76VA )

H : for LA35 ( 86VA )

N : No Transfomer

Input Voltage

120 = AC120V

220 = AC230V

Function Type

M1 : Memory Type

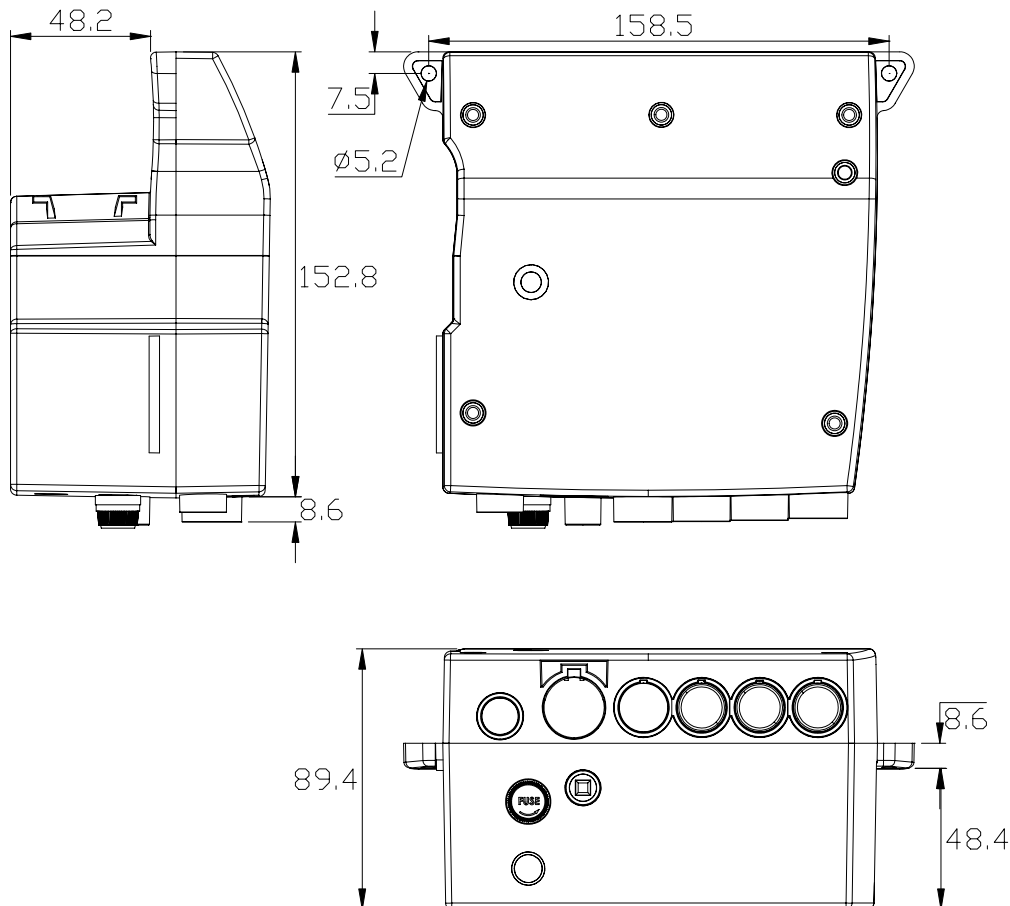
E 1 : Simple Type

Control Box Type CB28-Standard

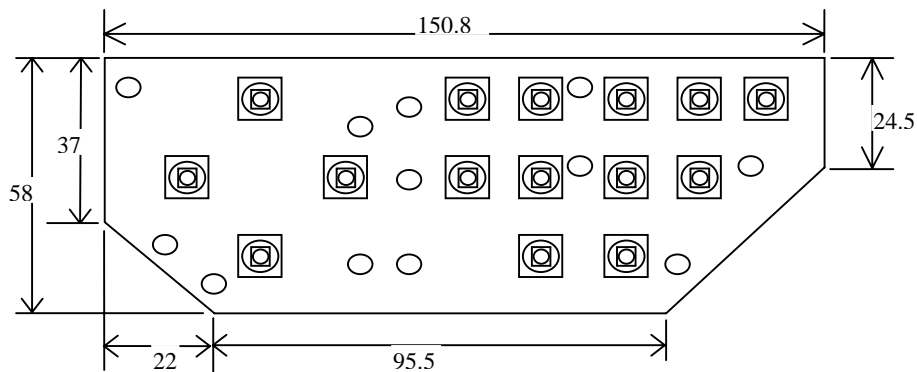
( Plugs on CB28 are DIN Plug )

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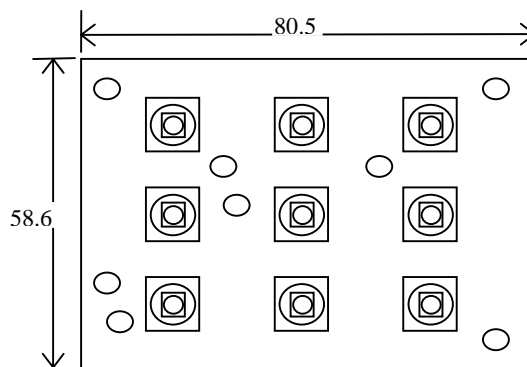
### CB28 Outer Dimension:



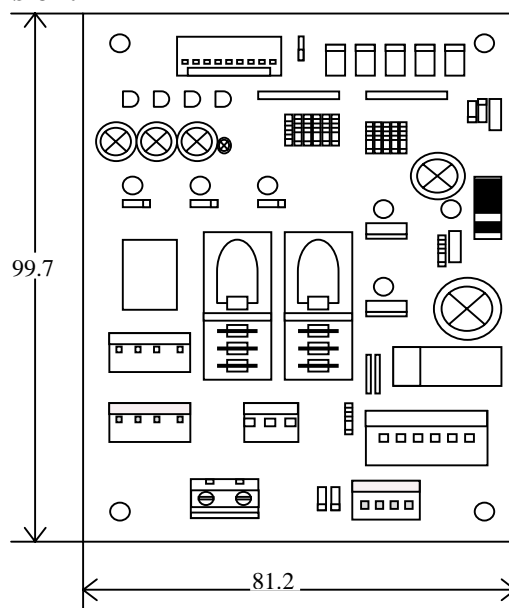
### Main Operating Board Dimension:



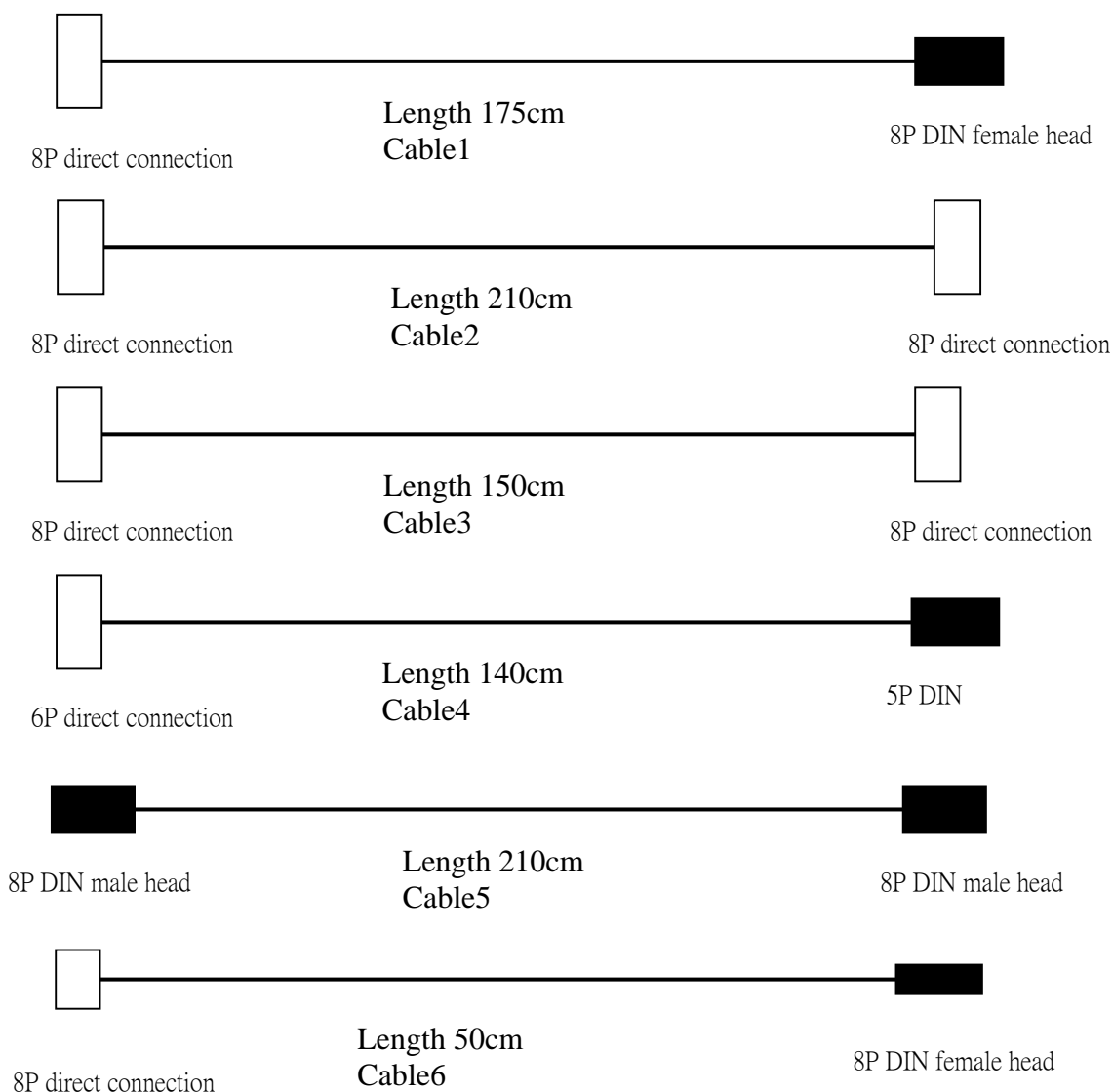
### Secondary Operating Board Dimension:



## Treatment Board Dimension:



## Connection Cable Dimension:



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## 5 Control

### 5-1 HB3X



HB3X is a compact design with a beautiful streamline shape. LINKAN A/C offers HB3X with protection class IP66 as standard and with function of simultaneous movement (twin action). It can be used in homecare and nursing beds and the price is very competitive.

#### Features:

- Handset for operating up to 3 actuators
- Easily operated by both left-and right-handers
- Ergonomic and elegant design
- Tactile TACT switches secure long lifetime
- Up to 6 easy-touch buttons
- Protection class: IP66
- 1m straight cable + 20 cm coiled cable
- Hook for easy placement
- Color: Black

#### Options:

- Either control back and foot separately or simultaneously
- Power indicator light
- The length of coiled cable can be ordered upon customer's needs
- Straight cable 90° Din plug (for CB06 of LA30 only)
- Customized front cover (Min. Order: 1,000pcs)
- Color: Gray-white (Min. order: 1,000 pcs)

# HB3X Ordering Example:

**HB3 3 S C - C 0**

## FRONT COVER

0 : STANDARD

1 : TWIN ACTION FUNCTION

## CABLES

C : COILED CABLE

S : STRAIGHT CABLE

O : WITHOUT PLUG

## COLOR

- : Black

+ : Gray-White

## FUNCTION (Operate two actuators simultaneously)

C : TWIN ACTION FUNCTION

## TYPE OF PLUG

S : 8 Pin Din (STANDARD)

B : 90° Din Plug (FOR CB06 ONLY)

## NO. OF CHANNELS

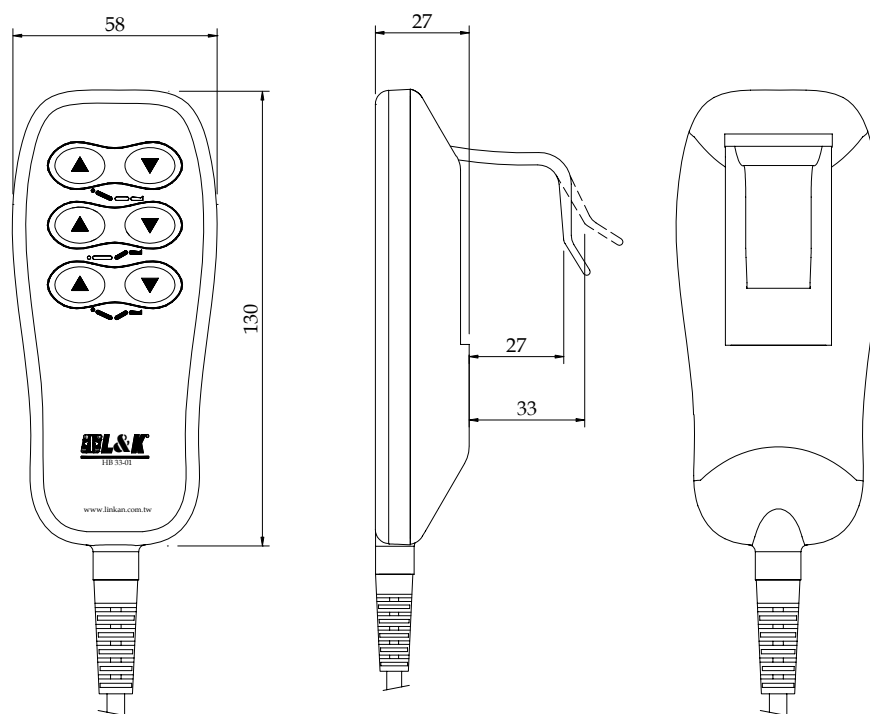
1 : 1 CHANNEL

2 : 2 CHANNELS

3 : 3 CHANNELS

## HANDSET TYPE HB30

## Dimensions:



## Notice:

- ★ Max. 6 press buttons; Can operate 3 actuators movement
- ★ Can be used with CB02、CB06、CB07、CB09、CB12、CB16、LA30

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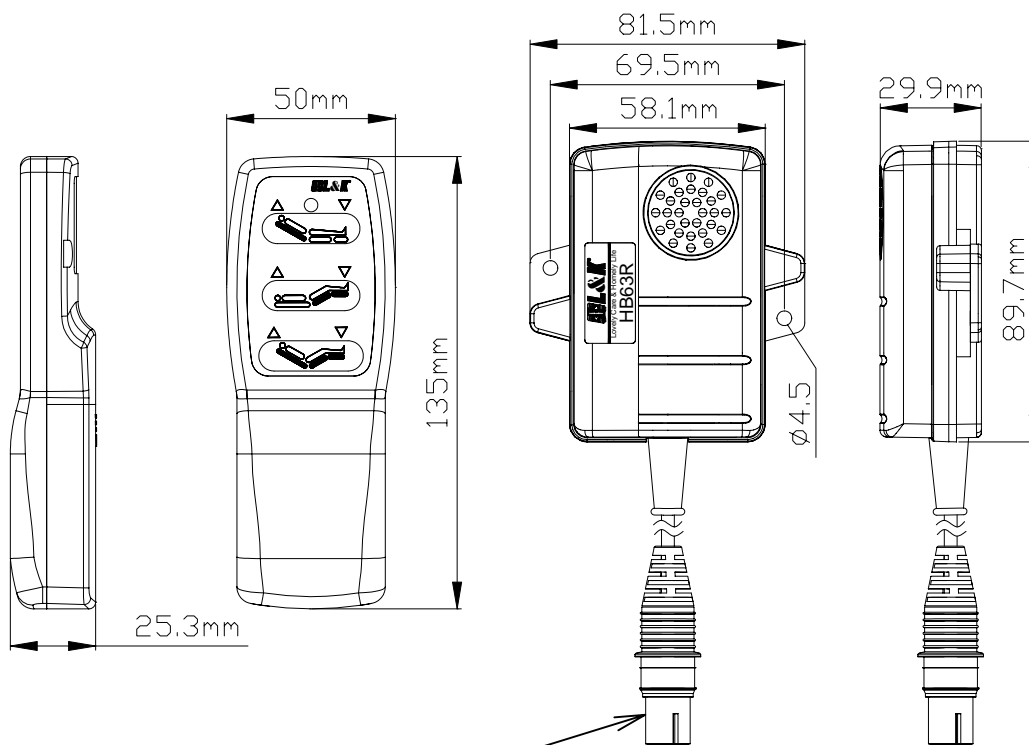
## 5-2 HB63R&S



This is a remote controller particularly for homecare beds & chairs. The streamline shape and no dead space for remote control are the most outstanding features. It is compatible with control box, CB02S.2.

### Features:

- Max. 2 actuator operation
- Simultaneous movement for CH1 & CH2 (Twin action function)
- No dead space for remote control
- Power indicator light



**Remote controller -HB63S**

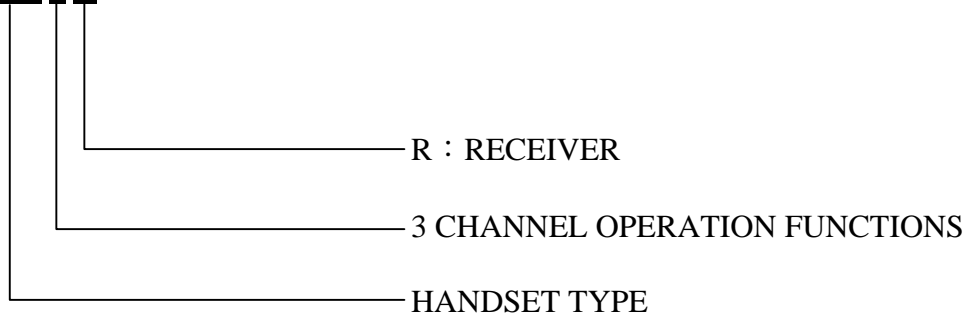
9P signal plug (male)

**Receiver -HB63R**

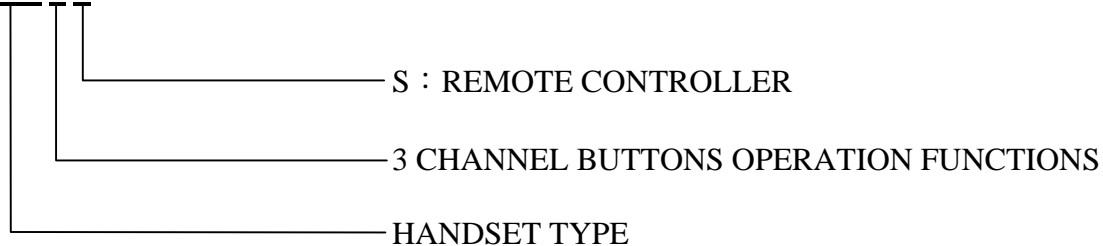
Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## HB63R&S Options:

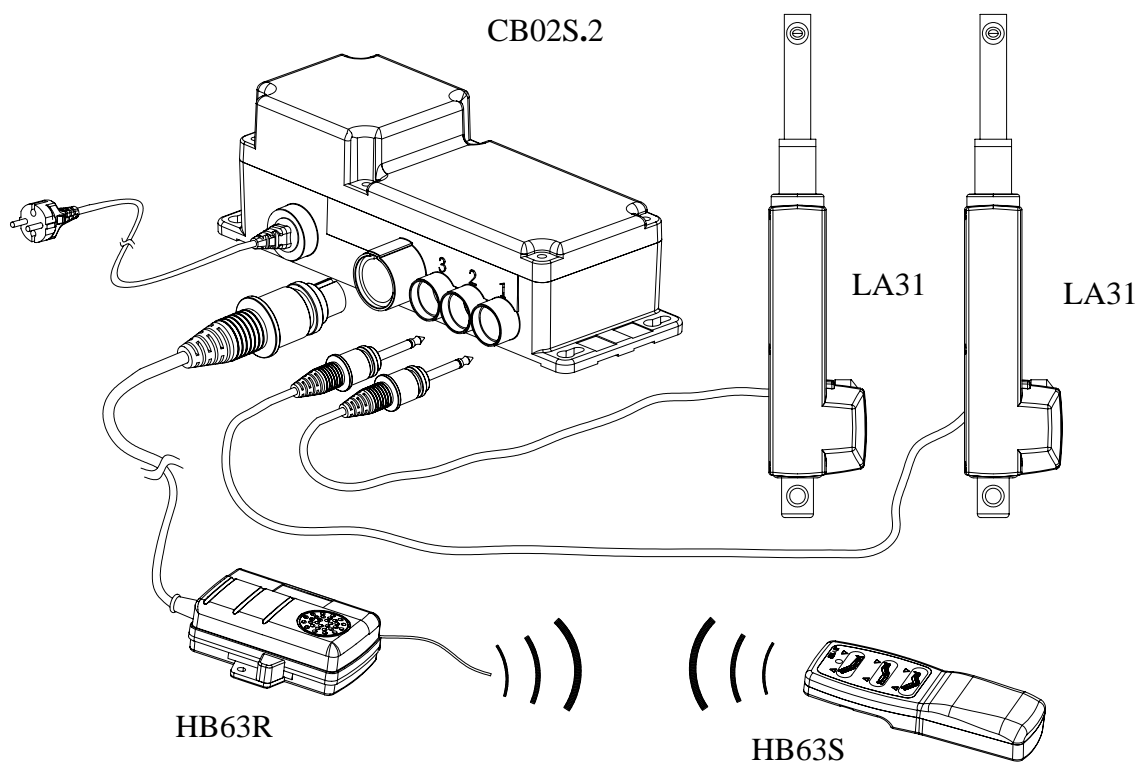
### HB6 3 R



### HB6 3 S



## Illustration of installation :



※HB63R is only compatible with CB02.S2 dated at Jan. 01, 2006 or later.

### Notice:

- ★ HB63R and HB63S only can be used with CB02S. 2
- ★ Standard Color: Gray-White



HB8X combines ergonomic design and functionality. LINKAN A/C offers HB8X with protection class IP54 as standard and a series of function such as memory and simultaneous movement.

**Features:**

- Handset for operating up to 4 actuators
- Easily operated by both left-and right-handers
- Ergonomic and elegant design
- Tactile SMD switches secure long lifetime
- Protection class: IP54
- 0.6m coiled cable
- Up to 10-easy touch buttons
- Easy to disassemble and repair
- Hook for easy placement
- Color: Black
- Can used with ACP handset

**Options:**

- Memory function
- Parallel drive: up to 4 actuators
- Color: Gray-white
- Front and back inclination function
- Left and right inclination function
- S straight cable



# HB8X Ordering Example:

**HB8 3 - C 0**

## FRONT COVER

0 : STANDARD

1 : TRENDELENBURG FOR CB16

2 : TRENDELENBURG FOR CB24

3 : TILTING (REVERSE BED) FOR CB22R

4 : MEMORY FOR CB05

## CABLE

C : COILED CABLE

S : STRAIGHT CABLE

0 : WITHOUT PLUG

## COLOR

- : Black

+ : Gray-white

## NO. OF CHANNELS

1 : 1 CHANNEL

2 : 2 CHANNELS

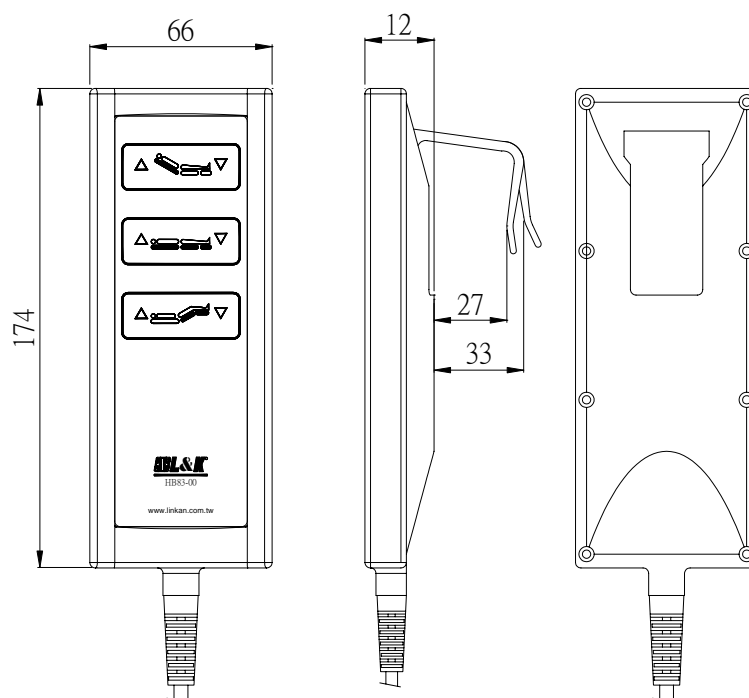
3 : 3 CHANNELS

4 : 4 CHANNELS

5 : 5 CHANNELS

## HANDSET TYPE HB80

## Dimensions:



## Notice:

★ Max. 10 press buttons. Can operate 4 actuators

★ Can used with ACP handset

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## 5-4 FS



LINKAN A/C Foot Switch is designed and developed for LINKAN A/C controller. LINKAN A/C Foot Switch is designed to control hospital beds, obstetric tables, rehabilitation beds, beauty salon chairs, etc.

For user's convenience, 4-set control is designed on one Foot Switch. It is easier and more accurate for operation.

### Features:

- Streamline shape and ergonomic design.
- Compatible with LINKAN A/C controller CB02, CB05, CB06, CB09, CB12 and CB16
- Up to two-channel control.
- Protection class: IP45

### Switch Functions:

CH \ FS	UP	DN	BU	BD
CH1-UP	⊙			
CH1-DN		⊙		
CH2-UP			⊙	
CH2-DN				⊙



## FS Ordering Example:

**FS-2**

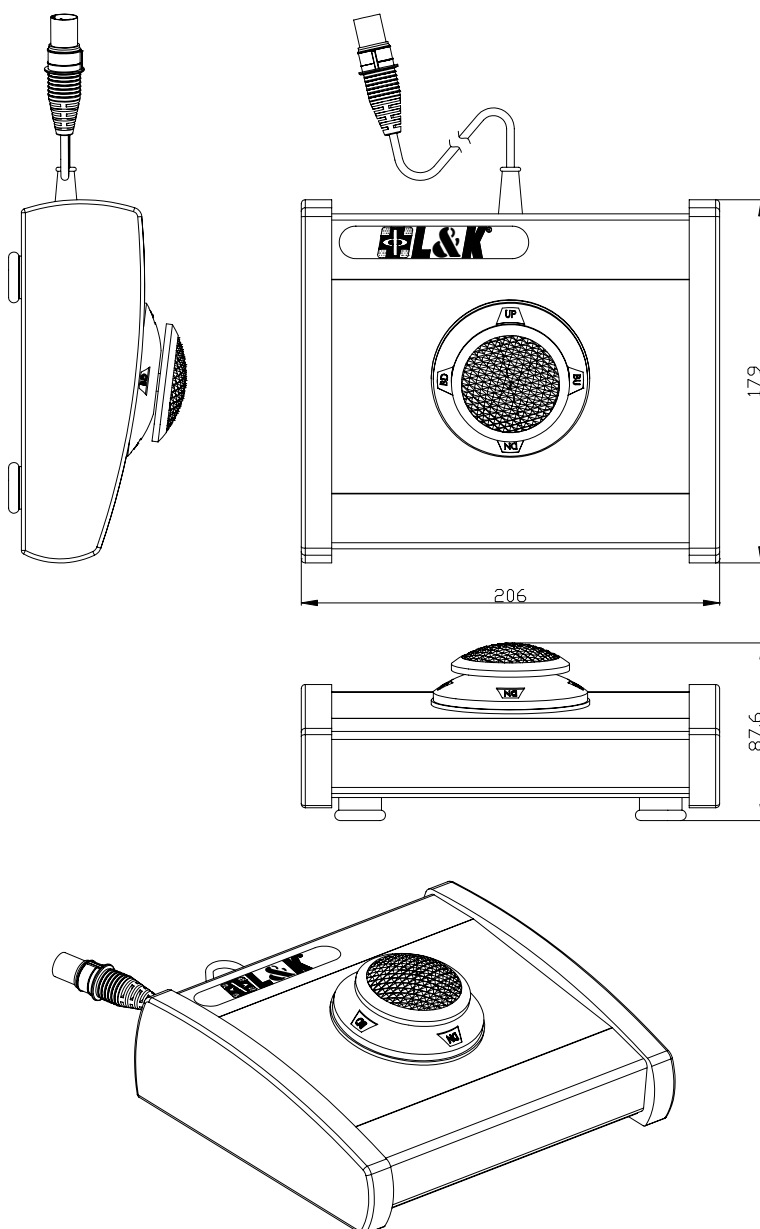
— **Switch Function**

1-1 CH

2-2 CH

— **FS : Foot Switch**

## Dimensions



### Notice:

Max. operate 2 actuators.

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## 5-5 FLS

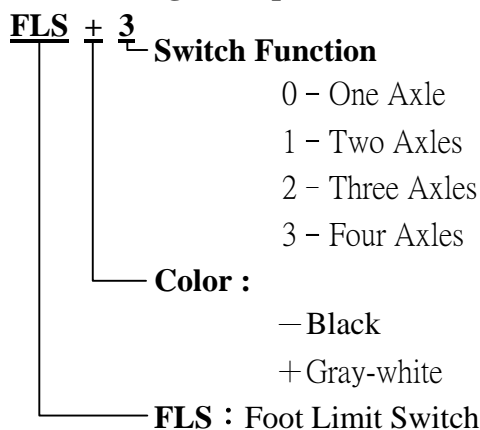


The single axle Foot Limit Switch (FLS) is developed for operating in coordination with LINKAN A/C controller. FLS can be used on hospital beds, gynecological table, beauty salon chairs, operating tables, etc.

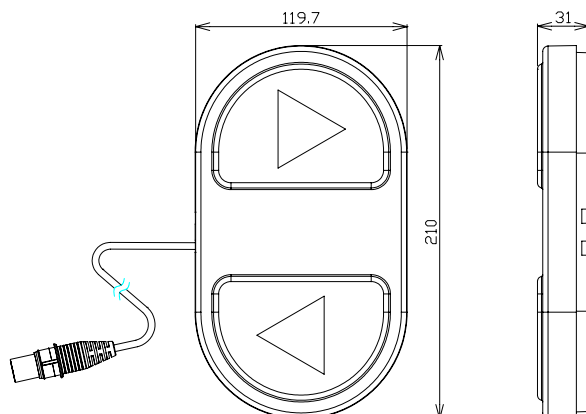
### Features:

- Simple and practical design.
- Protection class: IP 66
- The user can control one actuator with 2 or above FLS by series connection, or control actuators with 2 or above FLS.
- Endurable for impaction. With long life-span
- Cheaper price

### FS Ordering Example:



### Dimensions



### Notice:

- ★ Can be used with CB02、CB05、CB06、CB07、CB09、CB12、CB16
- ★ Can control up to 4 actuators with 2 or above FLS by series connection

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## 5-6 ACP



ACP (Attendant Control Panel) is designed for most electric hospital and care beds. It allows nursing staff not only to directly control the position functions, but also to lock the single function or whole position functions.

ACP is an ergonomic design and easy to install on most electrical beds. The installation position is supposed to be out of reach of the patient (such as in the foot end broad of bed). This is to prevent inappropriate or even dangerous operation to the patient and stop the handset function.

### Features:

- Control up to 4 channels while connecting with CB09, CB16 or CB24
- Beautiful streamline shape and compact design
- High-strength plastic housing protects the electronics
- ACP with keyboard can be used as an extra handset
- Protection class: IP51
- 2M straight cable
- Color: Gray-white
- Return to original position Function Button(This function can let all actuators return to the original position)
- Can be used with HB8X series handsets simultaneously

### Options:

- Protection class: IP66
- The length of coiled cable can be ordered for customers' needs
- If other front covers than standards are requested, customers themselves must design them. The plates designed by the customers can be executed according to their own designs including channel functions.
- Customized front cover (Min. Order: 1,000 pcs)

## ACP Ordering Example:

**ACP 4 - S - A**

### FUNCTION

A : A type ACP rotating buttons lock both ACP and handset

B : B type ACP rotating buttons only lock handset, pressing buttons on ACP still can work

### HANDSET

S : FOR CB16

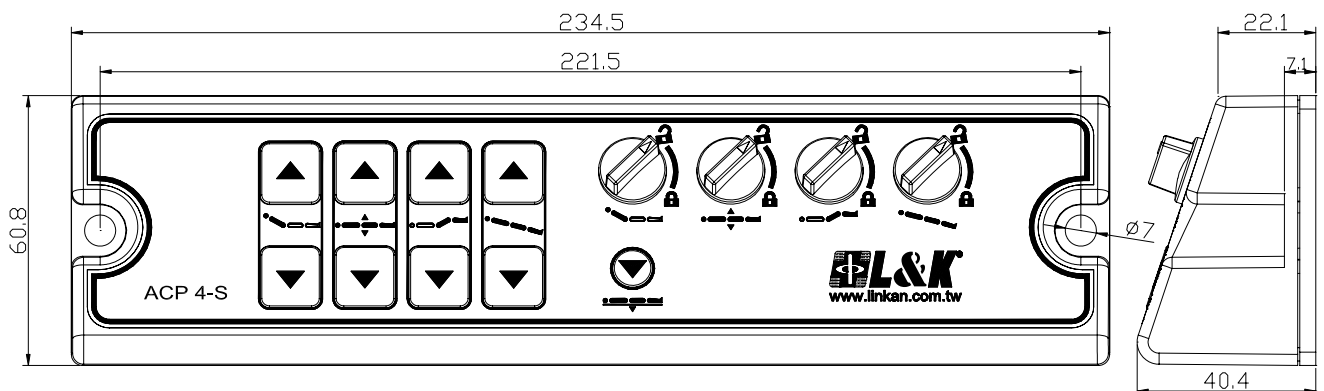
### NO. OF CHANNELS

3 : 3 CHANNELS (Can choose A or B type ACP)

4 : 4 CHANNELS (Only used in A type ACP)

### TYPE ACP

## Dimensions:



## Notice:

- ★ Can used with CB09 、CB16
- ★ Only control 3 axis and 4 axis actuators system
- ★ A type ACP: When functions of any rotating button on ACP are locked, both handsets and pressing buttons on ACP will be locked.
- ★ Actuators can not be equipped with break functions when they are used with ACP together
- ★ When batteries provide electricity, ACP did not provide function of returning original place.

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HB23 is used with LA30. Its easy and simple design fit ergonomic design with beautiful sense. It is used in chairs and beds in the field of home nursing or leisure. It is very convenient.

**Features :**

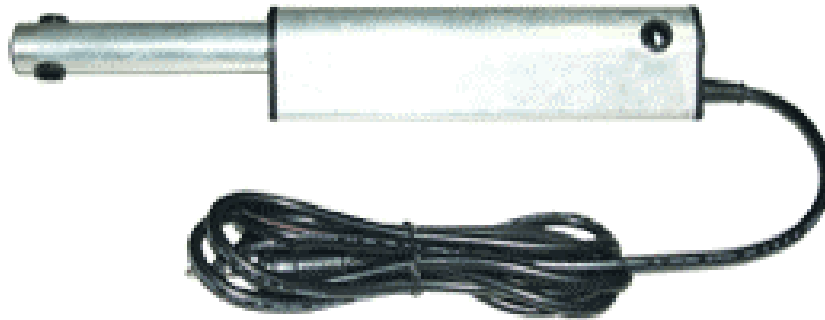
- Well-touched button design
- 1m straight line + 20 cm coiled cable
- Not breakdown easily due to the pulling
- Useful hook design
- Hard housing material for the impact & not break easily
- Black housing for dirt -proof
- Shape with fashionable and beautiful sense
- Function of simultaneous movement

**BH23 Ordering Example :**

**HB23 — C0**

## 6 Miscellaneous

### 6-1 TRANSMITTER

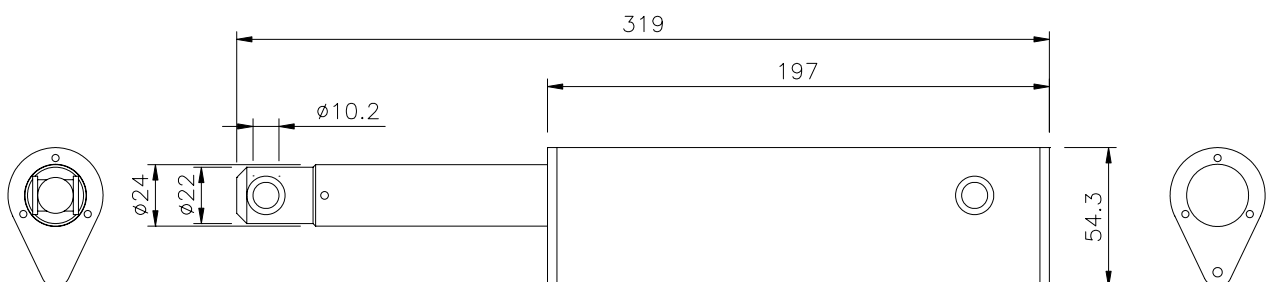


Transmitter is a sensor to detect stroke length. This is designed for CB22R & LA31, LA32 system solution. It can detect the stroke length between the two fixed point.

#### Features:

- TRANSMITTER is a accessory and designed for CB22R 、LA31 、LA32
- Surface material is aluminum alloy
- It is semi-manufactured for customers' own installation

#### Dimensions:



#### Notice:

- ★ Must used with LA31, LA32 actuator with stroke 100mm

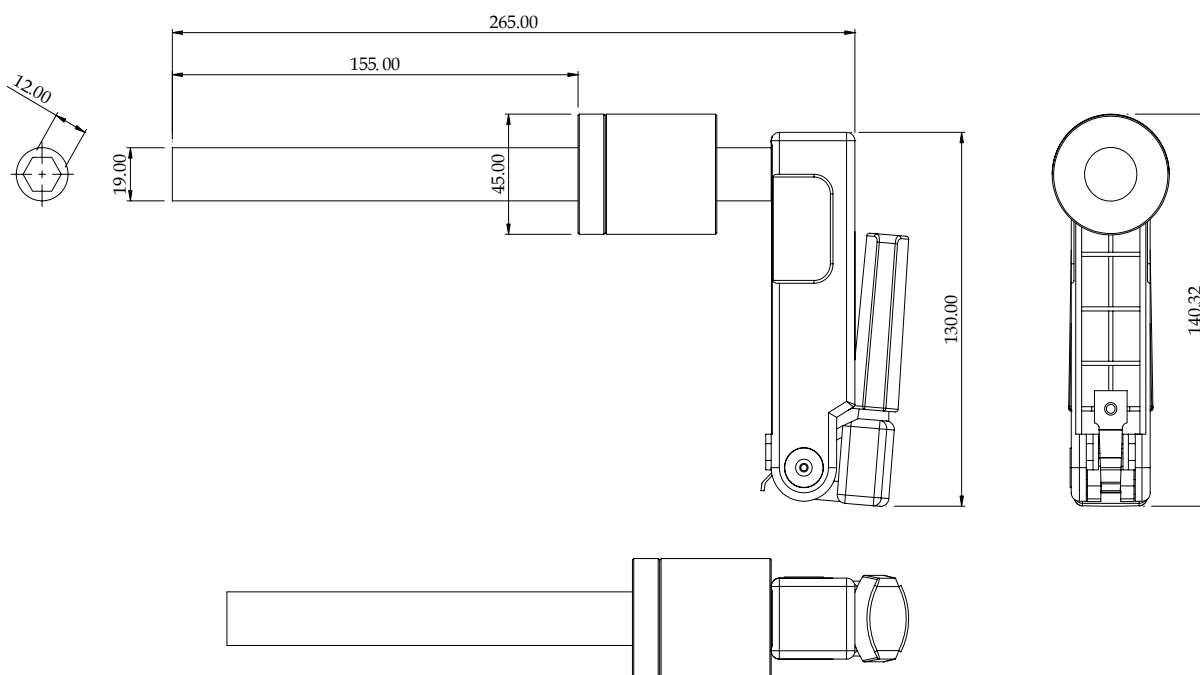


**6-2 MOLR**

MOLR is for LA36 & LA37. This is a mechanic overload protection device with a patent. MOLR can prevent motor from damage if user operates incorrectly. It also can be used as a general crank.

**Features:**

- Ergonomic and simple design, the handle can be folded for easy placement
- Special mechanic design with a patent, easy for users to drive motors

**Dimensions:**

## 6-3 SLS



SLS limit switch is used with actuators of LINKAN A/C. It can be applied in the structure of actuators and has dual protection functions.

### Features:

- Compatible with all LINKAN A/C systems
- Easy installation and small size
- Connected between actuators and control boxes
- Protection class: IP51
- Color: Gray-White

### Options:

- IP55 or IP56
- Other specifications in the length of cable

# SLS Ordering Example:

SLS. J 200 - D 100 - 2

## Option

- 0 : 1 × NO switch external signal unit / simple switch function
- 1 : 1 × NC switch external signal unit / simple switch function
- 2 : 1 actuator outwards direction stops when switch is activated / inwards direction is always possible
- 3 : 1 actuator inwards direction stops when switch is activated / outwards direction is always possible
- 4 : Double switch : 2 × NO switches external signal unit / simple switch function
- 5 : Double switch : 2 × NC switches external signal unit / simple switch function
- 6 : Double switch : 2 × NO switch, 1 × NC switch external signal unit / simple switch function

## Cable Length (For L2)

- 0 : 0 cm
- 100 : 100 cm
- 200 : 200 cm

## Type Of Plug

- D : Din
- J : Jack
- X : Without Plug

## Cable Length (For L1)

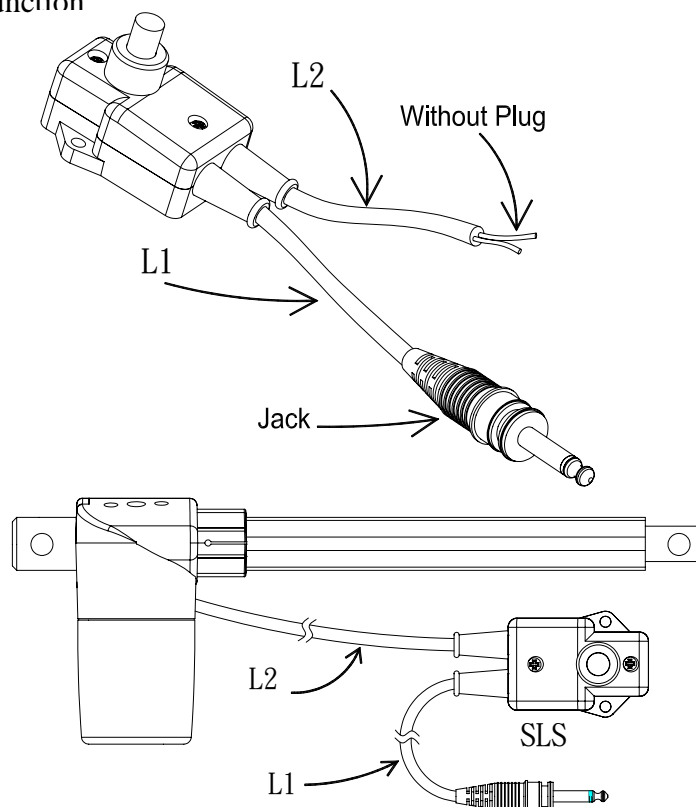
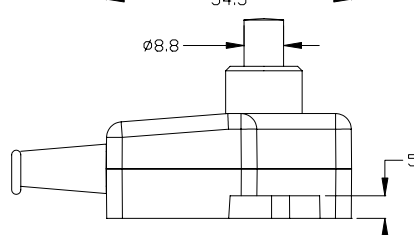
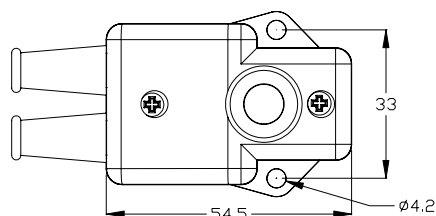
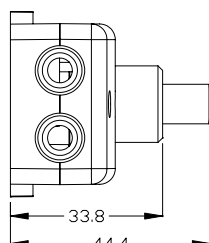
- 0 : 0 cm
- 100 : 100 cm
- 200 : 200 cm

## Type Of Plug

- D : Din
- J : Jack
- X : Without Plug

## SLS Type SLS-Standard

## Dimensions:



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## 7、Application

### 7-1 Medical Bed

#### 1. Medical and Nursing Demand

From the point of hospital development demand, the treatment is not restricted in operation room, intensive care unit and emergency room. Gradually, the treatment is shifted to wards. That is, hospital bed is not only for nursing purpose. It evolves the requirement with medical functions. Moreover, comfortable and pleasant wards gradually become new demands for patients.

#### 2. The general requirements of global medical bed

- a. Higher requirement in Hi-Low and lower in basic height.
- b. Adjustment : Hi-Low: 360~660mm, backrest: 0°~85° , Footrest:0°~45° °
- c. More steady bed frame and less space – the center of gravity should be steady, particularly no tilt when the beds are transported.
- d. Caster — weight load, dust protection, static electricity, the level of mobility — compatible with the balance level of bed itself.
- e. Energy-saving coordinated with speed required. The faulty rate (particularly for mobile stuff, which is exposed to easy damage.)
- f. Beds for better ergonomics
  - (i) For different race/ peoples in different areas.
  - (ii) Before: 4 pcs bed surface board – the head and foot ones are the same, the middle are 2 pcs. Now: 4 pcs are different.
  - (iii) Fitting the body shape, particularly the waist part.
  - (iv) Not sliding down
  - (v) Easier for cleaning & sterilization, even easy detached for repairing
  - (vi) Gas permeable
- g. Head and foot board : Well designed with firmness and mobility assistance. Available with ACP operation and case history card.
- h. Side rail — 4 pieces type, collapsible type, slide-down type, 4 pieces + slide down type, combination type
- i. Mattress : Gas permeable, waterproof, anti bacterium, fireproof .
- j. Color : Replace white with warm color

#### 3. The requirement of ICU bed and its functions:

ICU bed is used in intensive care unit. Because hospital beds are already available with some assistant treatment functions, some hospitals include the beds into the planning of intensive care unit. Therefore, those beds are different from medical beds.

- a. For doctor work, some emergent treatment must be applied when the patients are dying. The most common treatment is CPR. The beds have to fulfill the requirement of CPR by laying down the patients immediately, free from time and places.
- b. The requirement of tilting : The brain pressure goes up/ down rapidly; the hemorrhage after giving birth; helping the circulation in orthopedics, etc.
- c. Trendelenburg : For special treatments such as spinal, anal anus examination sample, and nursing to the patients.
- d. Caster with central lock : Convenient for a nurs when transporting the bed alone. For the functions of one direction transportation and position fixed.



#### 4. Emergency stretcher

A. Emergency stretchers are mainly used in the emergency room. Generally speaking, the nursing beds are seldom for transportation. The second one is medical bed, third is ICU bed. Emergency stretchers are most used on transporting the patients. Therefore, several features are necessary for this device:

- a. Easy to push
- b. Simple structure
- c. Light weight
- d. Sustainable for impact
- e. Anti shock

Above mentioned factors are related to casters.

B. For the patients, most of the patients just temporarily stay in the stretcher. It does not require much comfortableness. Moreover, the patients do not get on/off this device often thus the smaller surface of bed is acceptable and space-saving. This is also the advantage when transporting the bed. From this point, only simple head/ foot boards and necessary safety side rail are needed. This bed does not require lower basic height.

C. In terms of functions:

- a. Surface board : No nursing function available. Only the back and foot part are needed. The bed with 4 pieces (like medical bed design) is acceptable too. Usually, emergency stretcher only applies mechanical devices or gas spring on the height adjustment.
- b. Height adjustment and trendelenburg :
  - (i) Commonly available with two types: hydraulic (with foot switch) and electrical ones. Two mechanisms are possible: with one actuator (cylinder) or two-actuator (cylinder) design.
  - (ii) For electric ones, it should consider the factors of the anti-crash, anti-shock function and the electricity capacity.
  - (iii) For hydraulic ones, it should consider the factors of energy saving, speed and oil leakage.
  - (iv) For two-actuator (cylinder) design, with parallel principles, it can provide Hi-Low and trendelenburg functions. The structure is simpler.
  - (v) One-actuator (cylinder) design requires some special mechanical design. It usually applies gas spring for trendelenburg. For this function, 2 gas springs will be used for parallel function. The gas springs should be with compressed-less or with higher lock force. If one cylinder is used, please notice that whether this Jacky can be installed horizontally.
  - (vi) Notice : If the crank is defined as manual operation, electrical actuator is as automatic, the gas spring will be deemed as semi-automatic. Besides, gas spring itself is CPR.



### 3. The requirement to hospital bed and its function:

- A. The most basic requirements : Hi-low, backrest, and footrest. Medical bed must be available with hi-low function. The Hi-low request is to adjust height of the bed for patients getting off the bed and sleeping position as well as for doctor's treatment.
- B. Caster is a must. It must be available with brake function because medical beds are needed for moving around.
- C. In some advanced hospitals and high labor cost countries, central lock casters are used for direction and position-fixed control.



### 4. Nursing Bed

- A. No need for movement. Thus, this bed can be without casters, particularly for home beds.
- B. The side rails are assembling option because users can take care of themselves.
- C. For Backrest and footrest function, nursing beds are usually without hi-low function. However, with global aged population trend, for convenience of the aged people up and down the beds, the hi-low function is gradually becoming a must. However, the acceptable price of nursing beds is low, and its safety requirements are comparably not high, usually, hi-low function replace footrest one. The design provides Twin action. That is, the footrest is adjusted along with the movement when the backrest actuator is activated. It is mechanical structure to have backrest adjustment linked to footrest. Thus, when user adjusts backrest, his/her body does not slide down. The other factor is users usually do not need single footrest adjustment function because they do not receive treatment.
- D. The appearance of nursing beds looks more and more like home beds. They use more wood and less steel.
- E. For home nursing, it's important to easily-detaching the beds and DIY structure design. They have to be easily disassembled and shipped to families for re-assembling.



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## 7-2Chairs

The applications of actuator in chairs are vast, from hospital to family purposes. The following are some common application examples.

### 1.Dental Chair :



Function : (1) Backrest  
(2) Hi-Low

Requirement : (1) High speed, big thrust  
(2) Memory function  
(3) Foot switch

### 2. Gynecology table



Function : (1) Backrest  
(2) Arm adjustment  
(3) Hi-low

Requirement : (1) Low noise  
(2) Waterproof  
(3) Foot switch

### 3. Beauty salon chair



- Function : (1) Backrest  
(2) Footrest  
(3) Hi-low
- Requirement : (1) Low noise, high speed  
(2) Low price  
(3) Foot switch

### 4. Massage Chair



- Function : (1) Beck rest  
(2) Footrest
- Requirement : (1) Low price  
(2) Controller is not necessary



## 5. Electric wheel chair



Function : (1) Backrest

(2) Hi-low

(3) Rising up function

Requirement : (1) Low noise

(2) High thrust and low electricity consumption

(3) Controller is not necessary

## 7-3 Lifting Column

Lifting column is applied in lifting hi-low with bending force. The following are some applications:

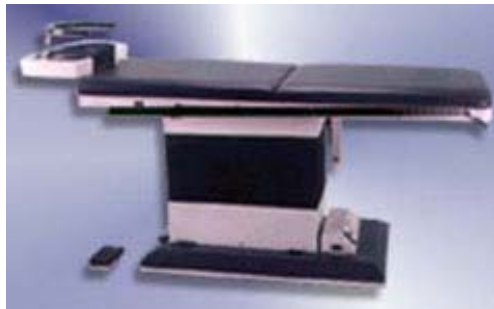
1.Examination table



2. Gynecology table



3. Operation table



4. Ophthalmology tables



The applications as above have an important point: requested to tolerate high bending force and perform without shaking when in operation. This requirement enables LINKAN LA38 ideal for using in above products. Foot switch is also required in most of those applications.

## 7-4 Electrical Bed with Manual Operation

The development background of LA35 、LA36 and LA37 :

In Asian countries, the power supply system is usually unstable. Thus, it could be necessary to operate applications even under no electricity condition. However, battery is not environmentally friendly and only with short operational time. From the above conditions, actuator for electrical/manual use was developed.

**LA35—** This actuator was improved from LA33. Even though LA35 has improved the difficulty for manual operation, this actuator still has the following problem :

- A. Not easy for installation. This is due to different installation dimension of products from different manufacturers.
- B. The manufacturing cost is high for its various types and difficulties for package and transportation.
- C. Vulnerable to Damage when it is operated manually or the bed frame is somehow deformed thus cause faults in End Stop functions.

On the basis of above reasons, LA36 and LA37 are further developed.

**LA36—**A complete revolution. This idea is to separate the spindle and motor units in actuator. The advantages are as follows :

- A. Easy for production due to its simple specifications and mass production.
- B. Easy for transportation.
- C. Strong against damage for its separate motor and spindle design. In this way, spindle part can be strengthened. The motor part will not be exposed to damage because of this simple design and structure.
- D. Directly adjust manual bed to electrical bed.

The disadvantages could be encountered :

- A. When spindle reaches limit, the motor need to be protected by control box cutting off electricity. Thus, this system increases the cost of controller.
- B. Upon different spindles from different manufacturers, it will require different thrust from motors.

**LA37—** This is a new product designed with the market feedback. It can efficiently solve the above problem/disadvantages. The more important is, this actuator is equipped with mechanical overload device. The advantages are as follows:

- A. Robust structure and easy installation for various bed types.
- B. With inner mechanical overload device to prevent from actuator damage when manual operation reaches limits.
- C. The installation dimension can be adjusted by customers themselves.
- D. Much easier when operated manually.

## 8 Installation

### 8-1 The Installation and The Usage of LA31 Q (LA32Q)

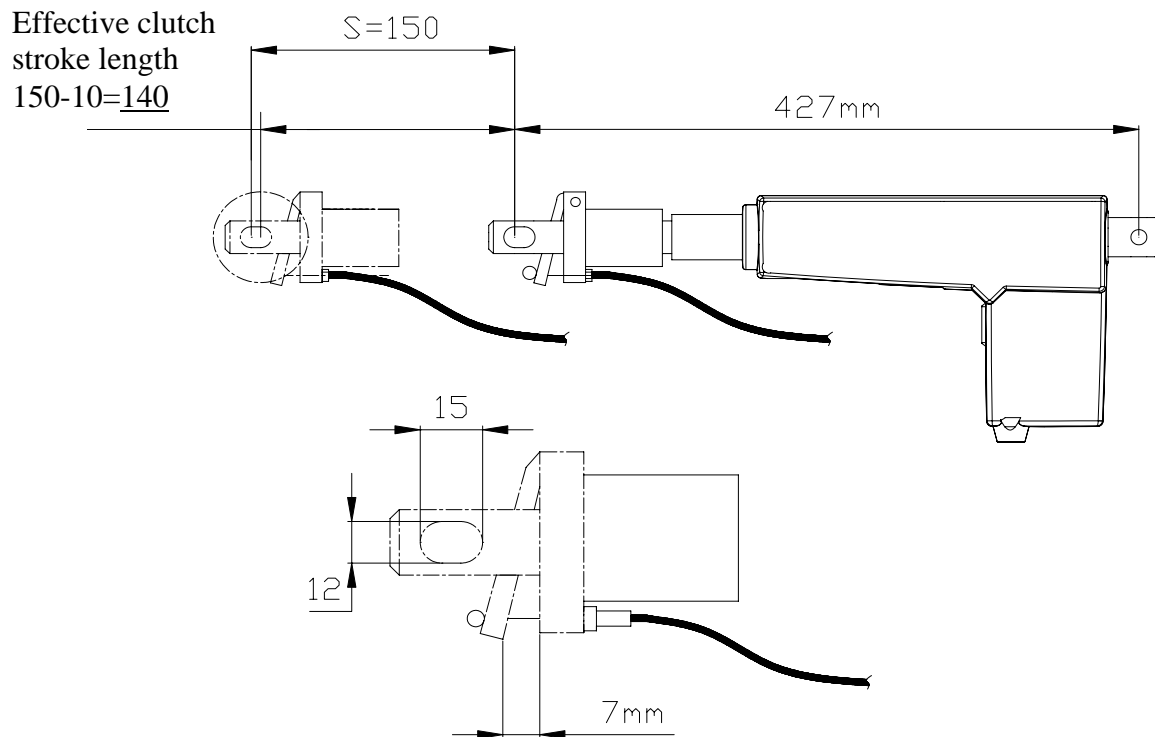
#### I. Choose the specification:

1. Compatible actuators: LA31.5、LA31.5B、LA31.9B、LA32.5、LA32.5B、LA32.9B
2. Compatible controllers: CB02、CB07、CB16、CB24
3. Compatible handsets: HB3X、HB8X

#### II. The installation dimensions

1. The installation dimension of LA31(LA32) with quick release is S+277
2. Effective clutch stroke = standard stroke(S) - 10mm

Ex. The dimensions and stroke length of LA31.5Q-15-200-BHJ(LA32.5Q-15-200-BHJ):



#### III. Installation notice:

Fig.1

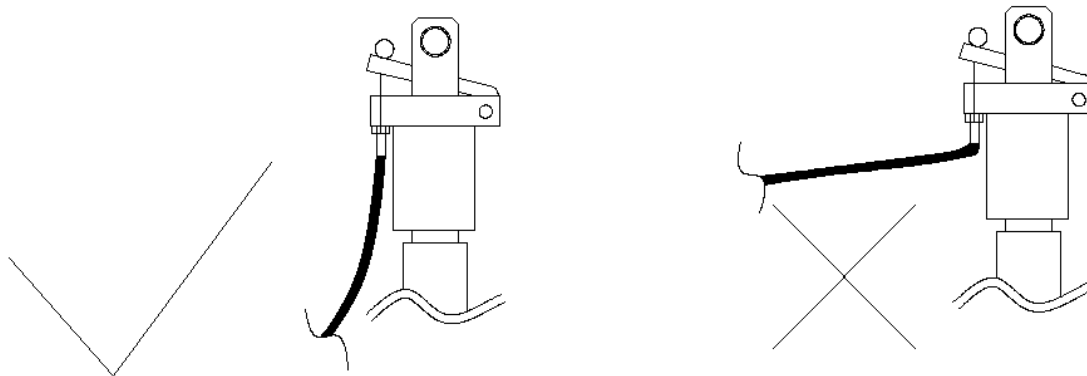


Fig.2

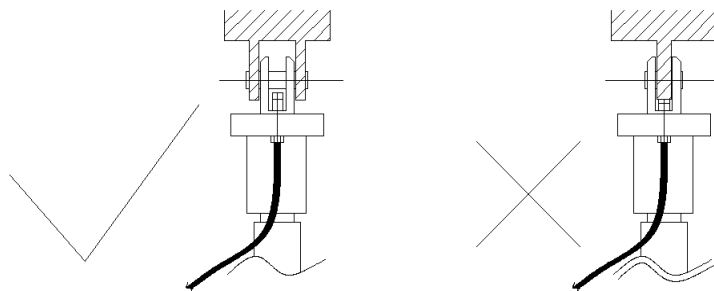


Fig. 3

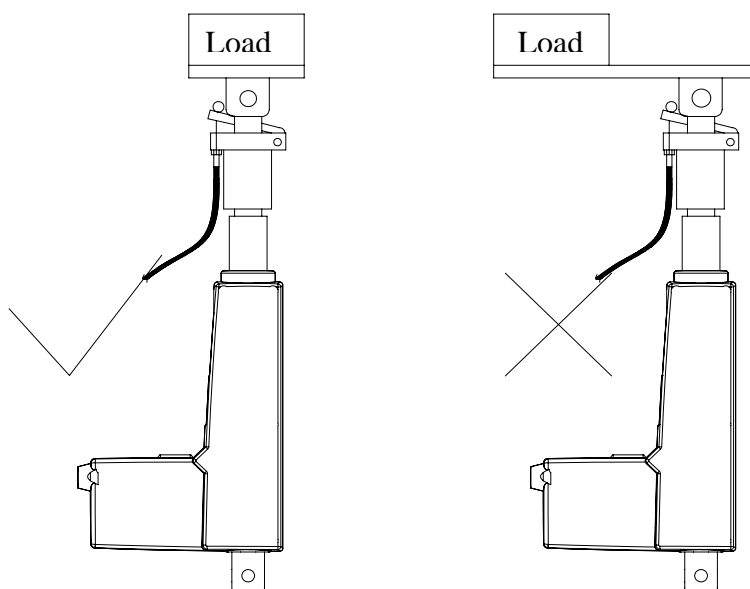


Fig. 4

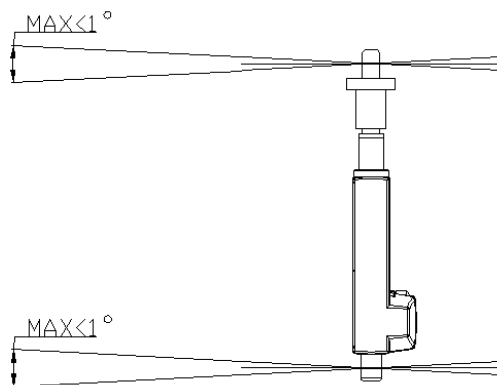
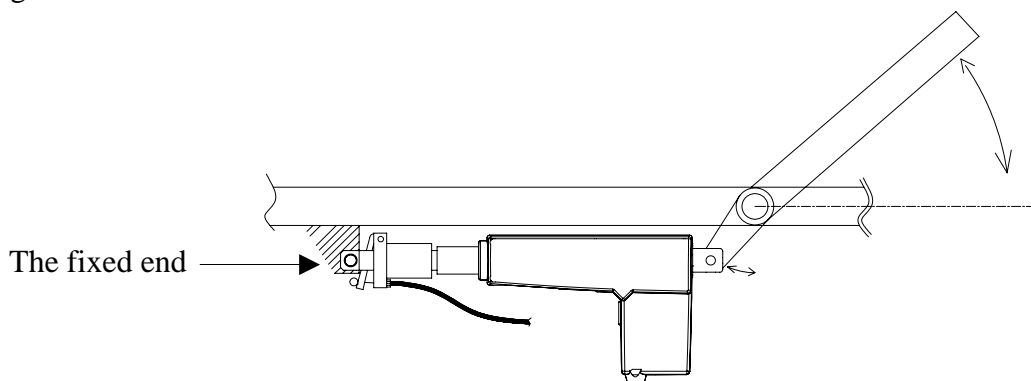


Fig. 5



Please contact LINKAN technical department for any installation problem.

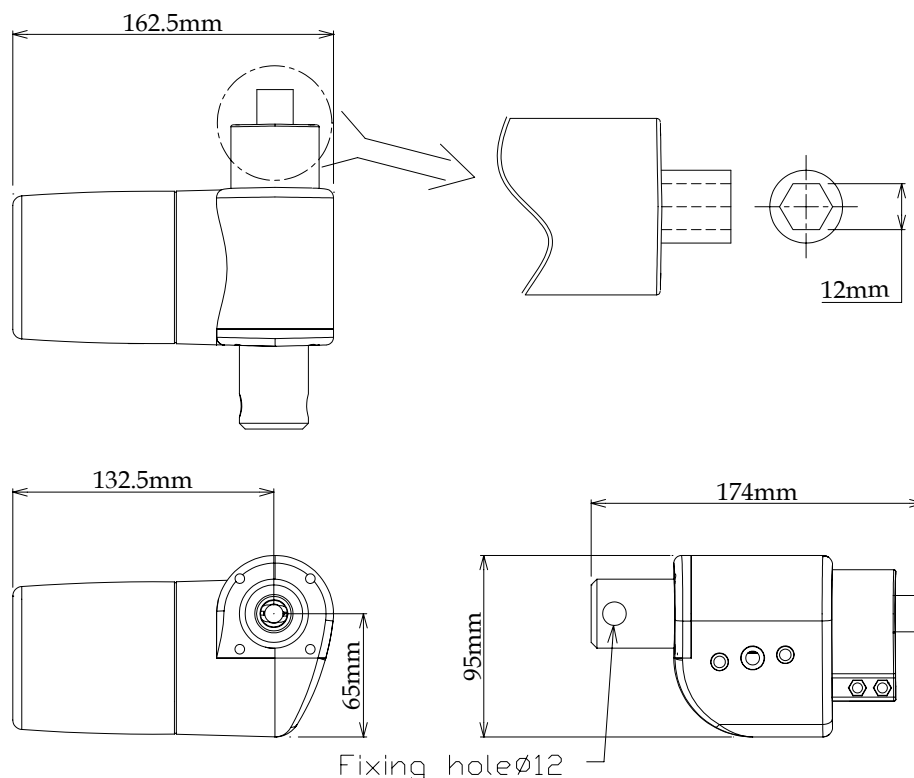
Specifications are subject to change without prior notice. It is the responsibility for the product users to determine the suitability of LINKAN A/C products for a specific application. LINKAN A/C will be responsible for replacing/ repairing defective products covered by the warranty if promptly returned to the factory. No liability is assumed beyond such replacement/ repair.

## 8-2 The Installation and Usage of LA36

### I. Choose the specification:

1. LA36.4 (Thrust 4000N) : Lighter load. Good for the backrest, footrest position in hospital beds.
2. LA36.6 (Thrust 6000N) : Heavier load. Good for the high-low function of the hospital beds.
3. Compatible controller: CB12.
4. Compatible handsets: HB3X、HB8X.

### II. The installation dimensions of LA36.6



### III. Illustration

1. Detach the cranks on the foot board of the bed (Fig. 1):

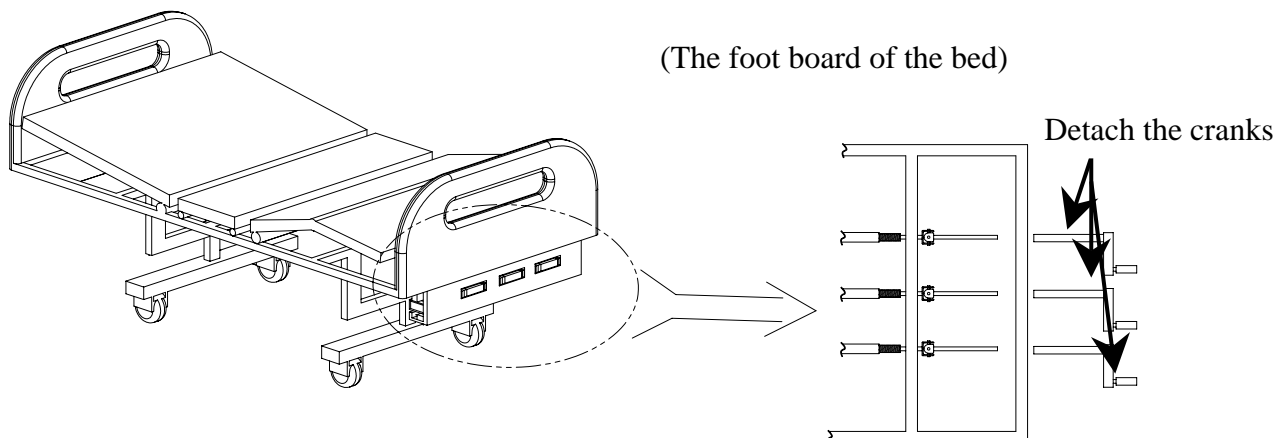


Fig. 1

## 2. Change the transmission shaft (Fig. 2):

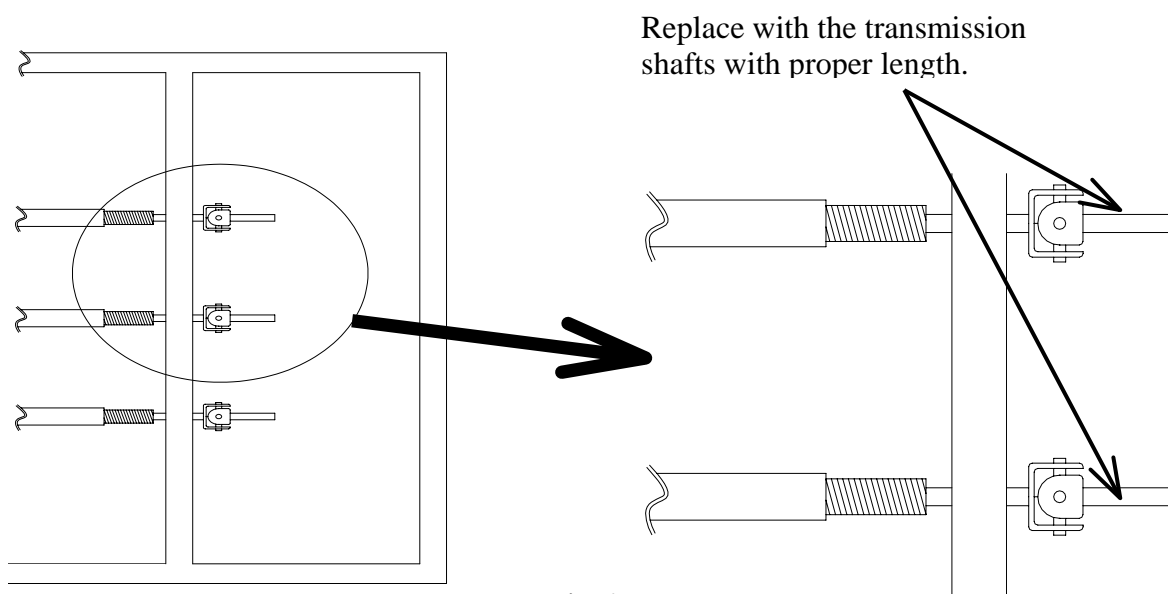


Fig.2

## 3. Install the mount at the foot end of the bed (Fig. 3, Fig .4)

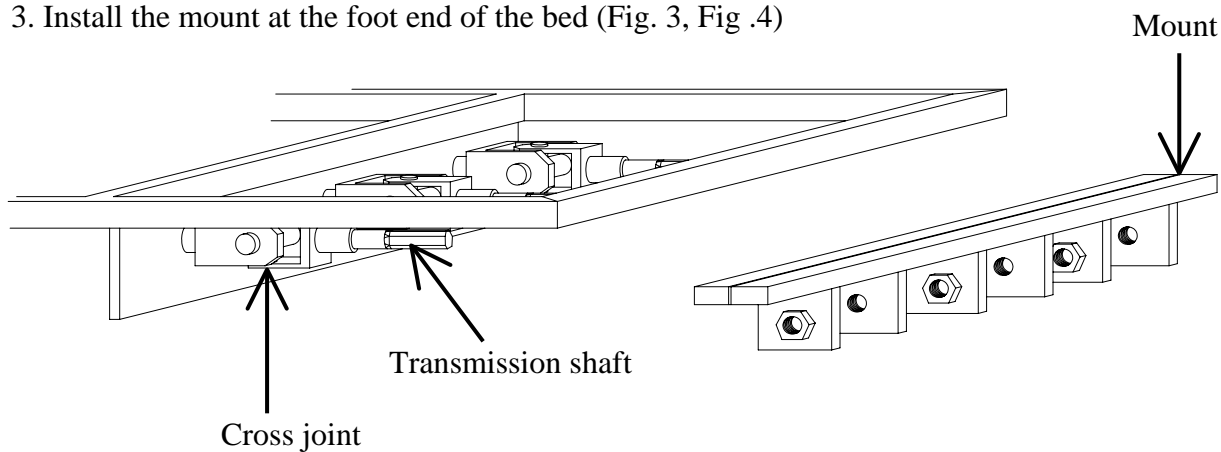
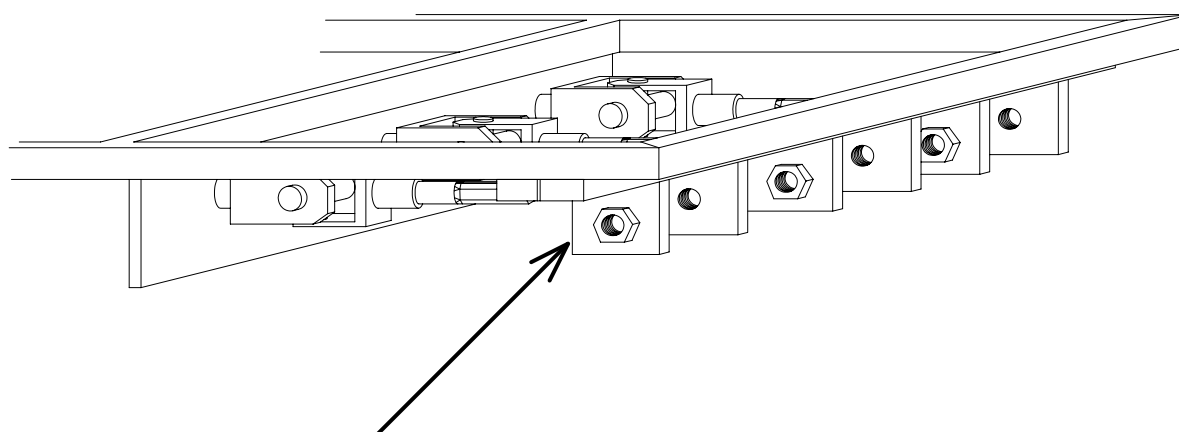


Fig. 3



Fix the mount at the end of the bed

Fig. 4

1. Put LA36 on, and tighten the screw. (Fig. 5)

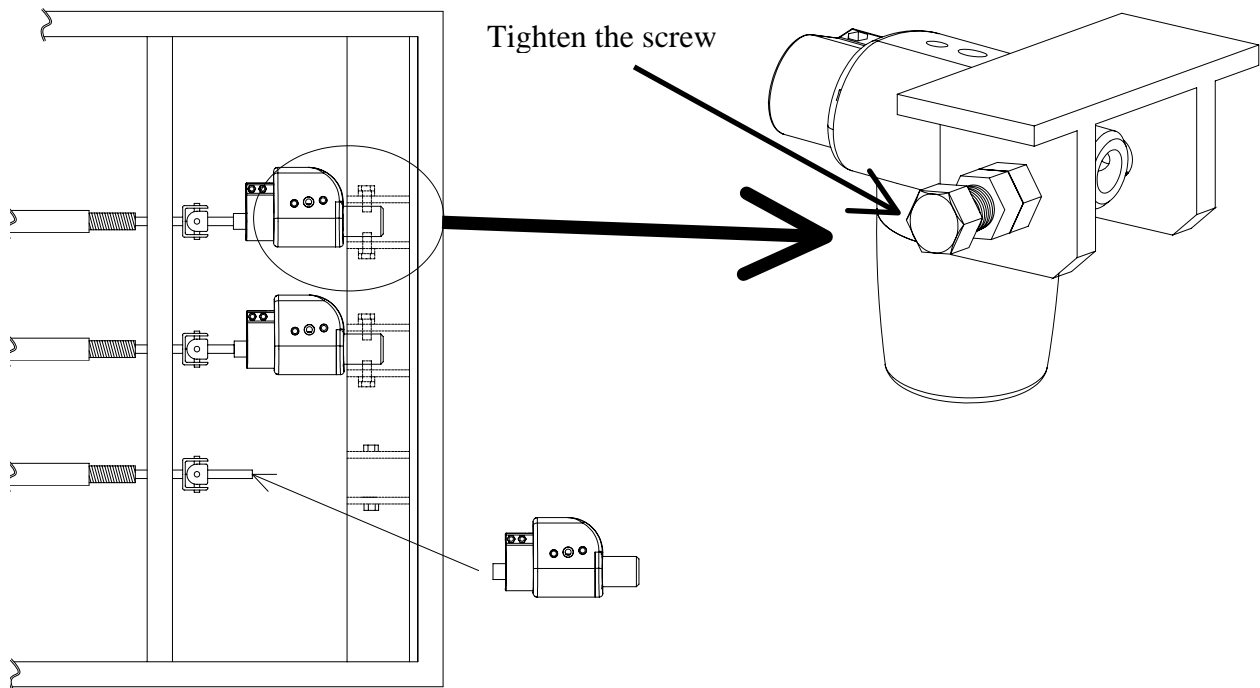
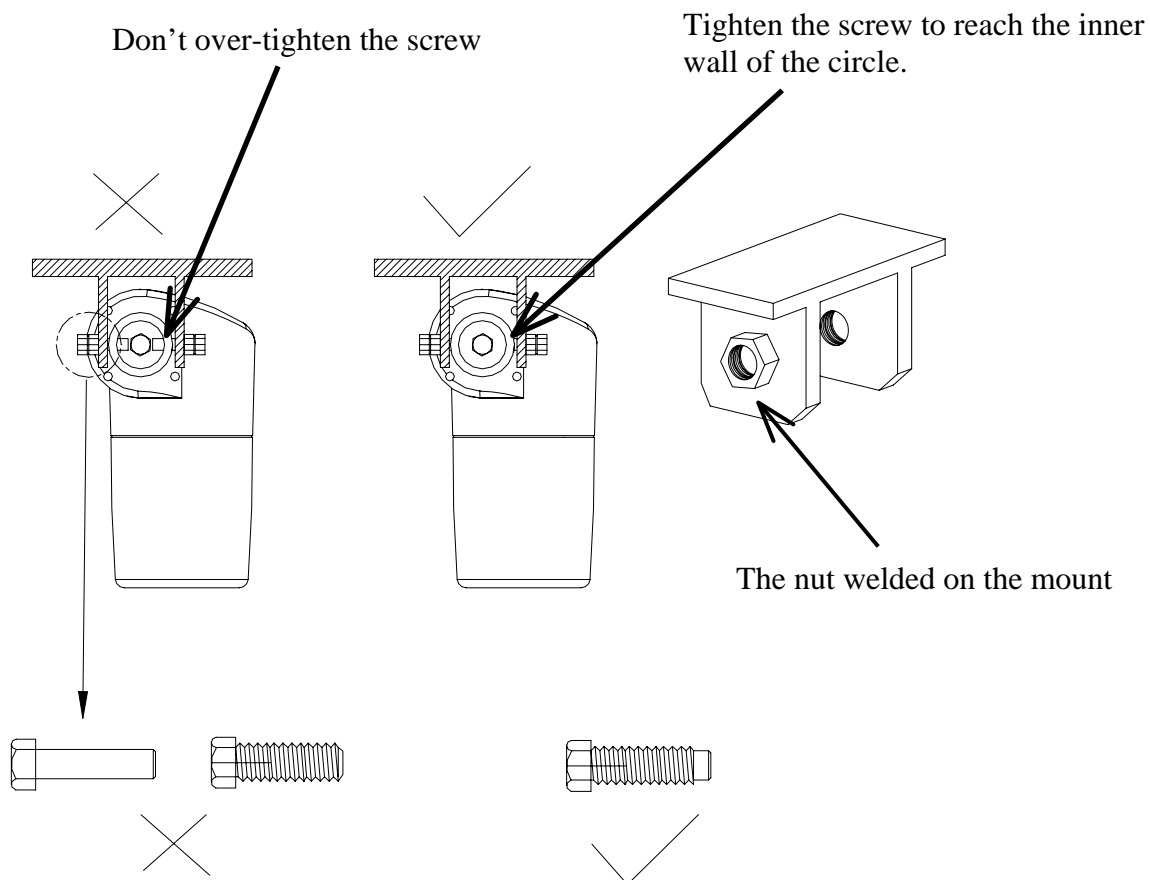


Fig. 5





#### IV Notice

1. Keep the cross joint and the center of LA36 in a straight line. (Fig. 6)

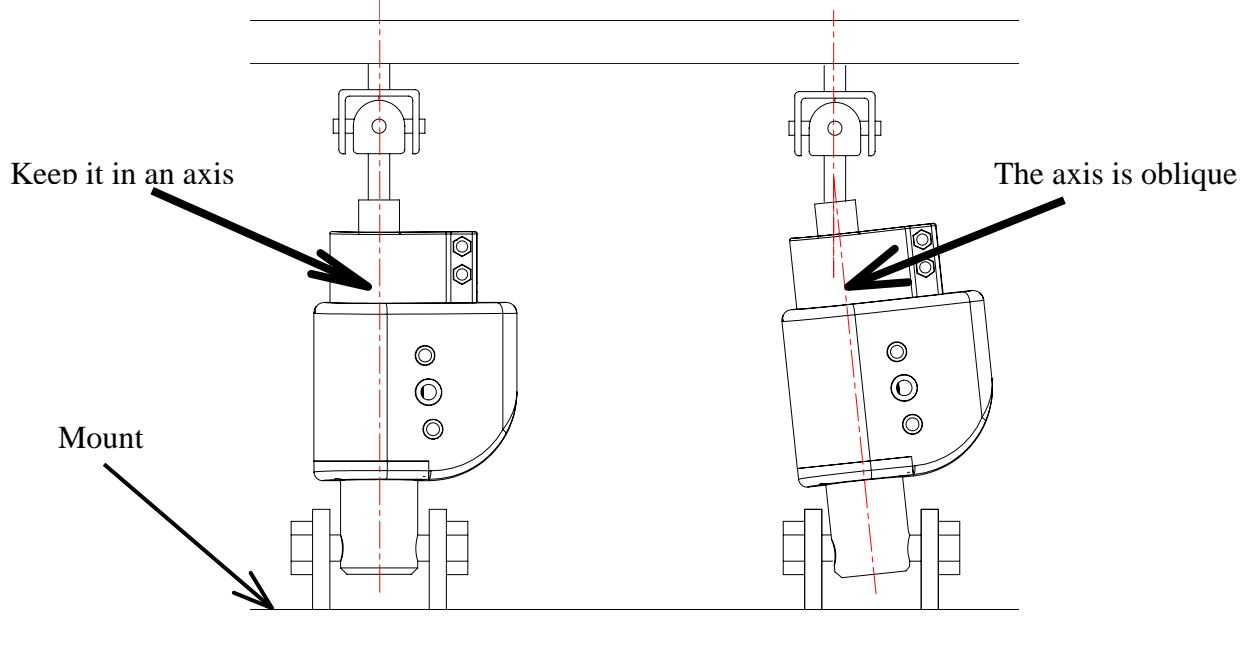
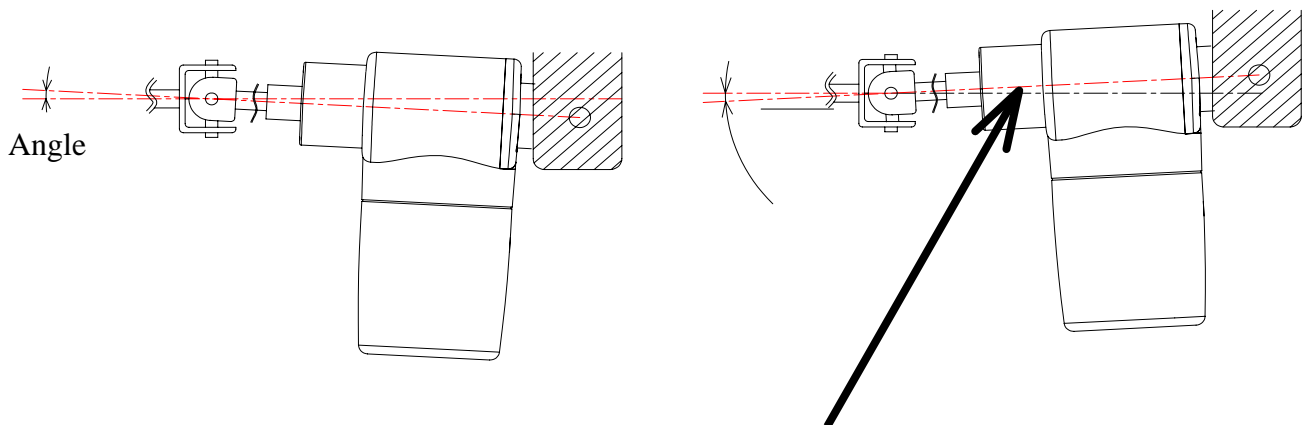


Fig. 7

Fig. 6

2. The angle between the horizontal line of the cross joint and the central line of LA36 should be lower than 2 degrees. (Fig. 7):



Avoid the angle caused from the drop height

3. Keep the proper fitting length between LA36 and the transmission shaft. It cannot be too deep or too shallow. Otherwise it'll cause noise. (Fig. 8)(Fig. 9):

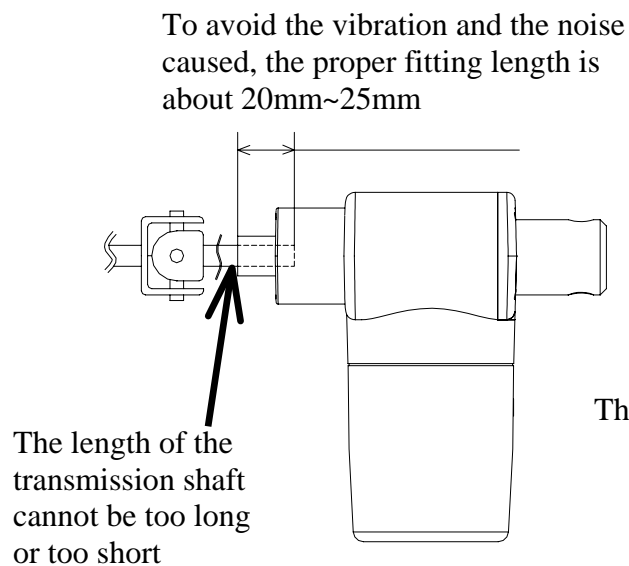


Fig. 8

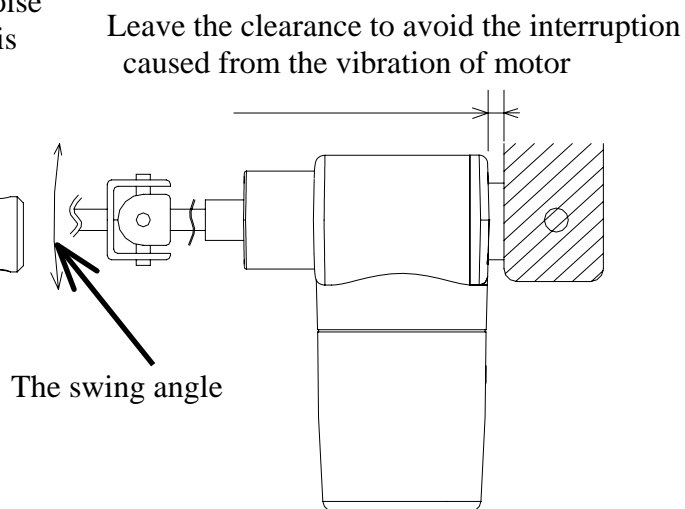
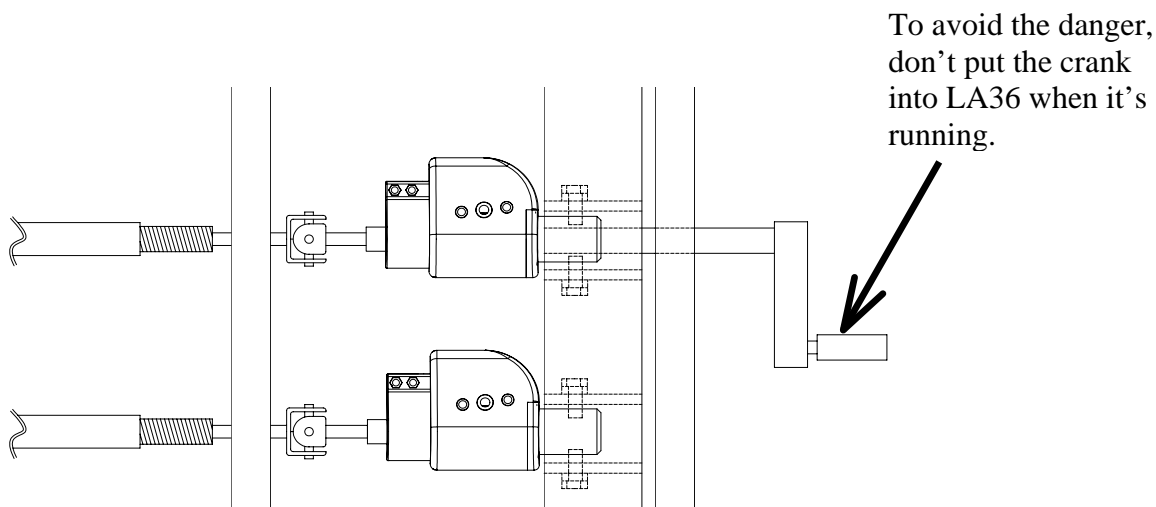


Fig. 9

4. To avoid the danger, don't put the crank into LA36 when it's running. (Fig. 10)



(Fig. 10)

## 8-3 CB05 USER MANUAL

### 1. Specification :

CB05 is a control box with inner chip, which can process the position setting function and is compatible with LA31, LA32. For such combination, the specification is as follows:

#### 2. Actuator :

- (1) Require Actuator with Reed Switch
- (2) Stroke range: 100mm~250mm , Thrust: 1500N~6000N
- (3) Compatible with LA31-R or LA32-R Only
- (4) Din Cable Only
- (5) Quick Release is not compatible
- (6) Max. 2 pcs of LA31-R or LA32-R

Example :

LA31.5BR-15-200-BHD (LA32.5BR-15-200-BHD)

→ R is a must for CB05

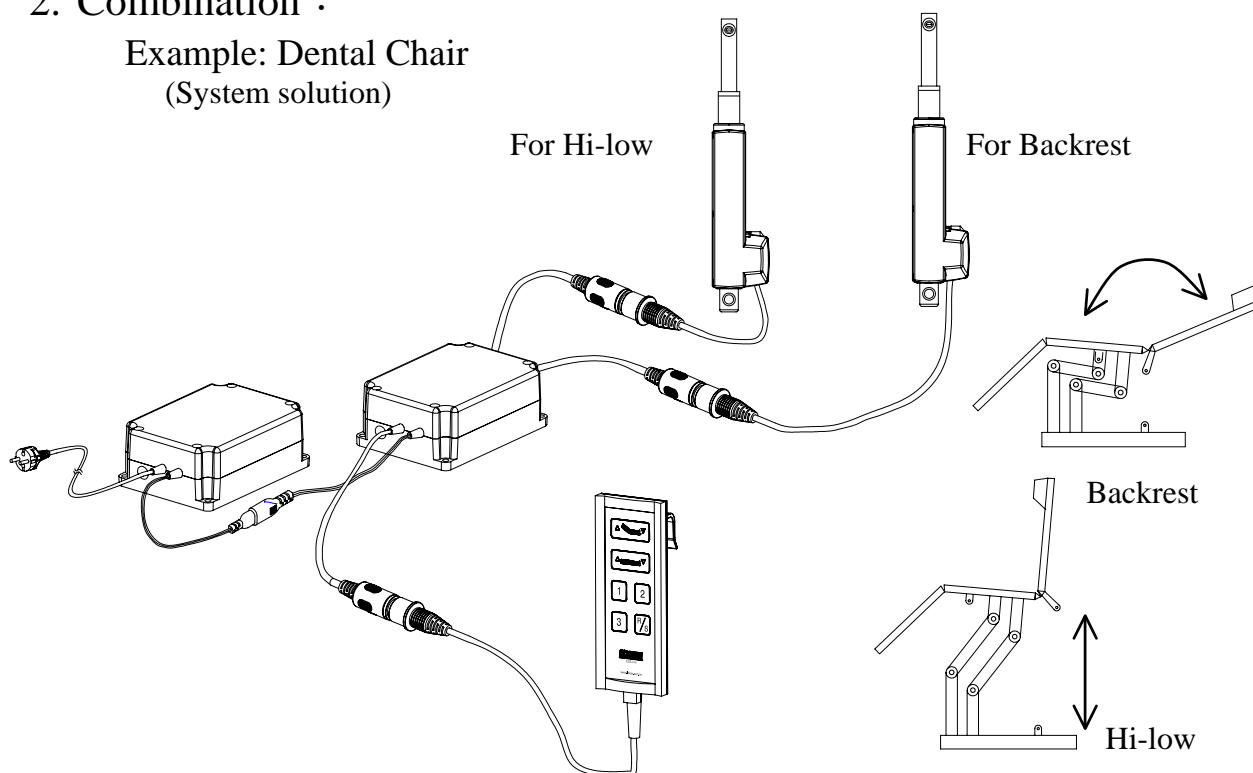
#### 3. Handset :

- (1) HB83-C4 for CB05.1A
- (2) HB84-C4 for CB05.2A

Notice : For FS-2 or other control, details can be referred to later chapter.

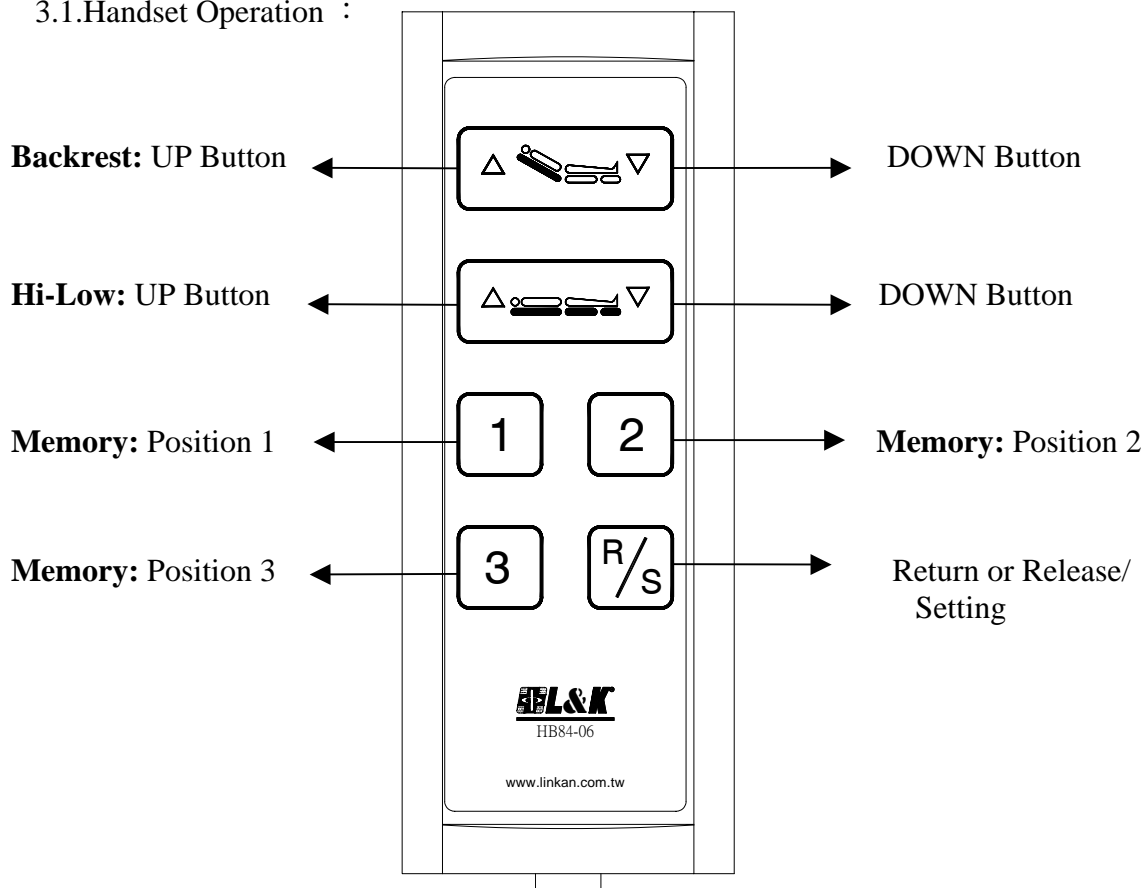
### 2. Combination :

Example: Dental Chair  
(System solution)



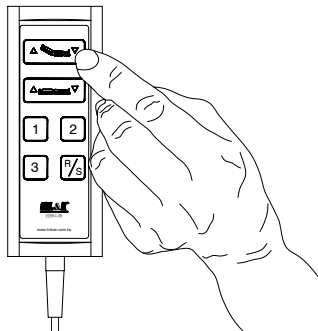
### 3. Operation and Functions :

#### 3.1. Handset Operation :

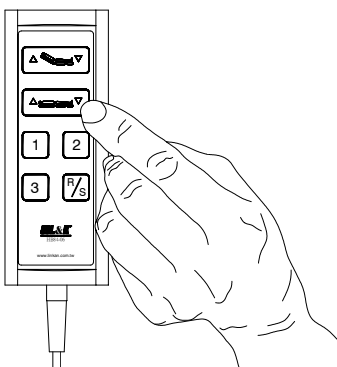


☆ When actuator connect control box for the first time, some faults in memory position may occur. In this case, the actuator position can be initialized as follows:

Press the backrest DOWN Button

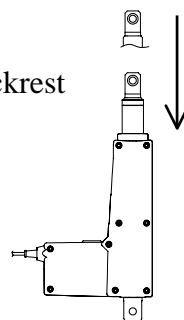


Press the Hi-Low DOWN Button



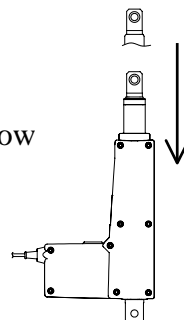
When the actuator is retracted to the lowest position, press the button for 3 seconds then release it.

Actuator for backrest



When the actuator is retracted to the lowest position, press the button for 3 seconds then release it.

Actuator for Hi-Low



Initialization is done.

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---

## 3.2. The Definition of Button:

### A. Actuator for Backrest

UP Button— This button is to activate the backrest position upward. Releasing this button can stop the movement. When the actuator reaches the highest position, whether press this button repeatedly or continuously, there will be no further movement.

DOWN Button— This button is to activate the backrest position downward. Releasing this button can stop the movement. When the actuator reaches the lowest position, the actuator stops. Keeping this button pressed for 3 seconds will initialize the system.

### B. Actuator for Hi-Low

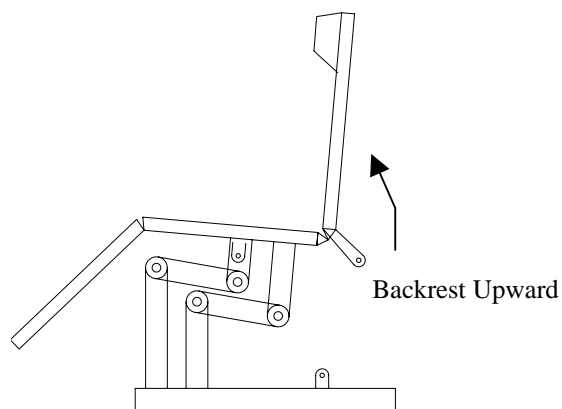
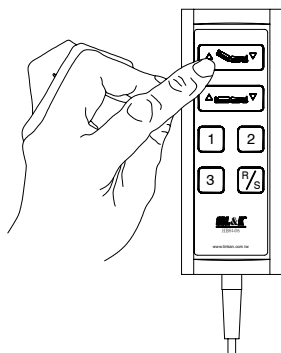
UP Button— This button is to activate the Hi-Low position upward. Releasing this button can stop the movement. When the actuator reaches the highest position, whether press this button repeatedly or continuously, there will be no further movement.

DOWN Button— This button is to activate the Hi-Low position downward. Releasing this button can stop the movement. When the actuator reaches the lowest position, keeping this button pressed for 3 seconds will initialize the system.

## 4. Common Operation Demonstration :

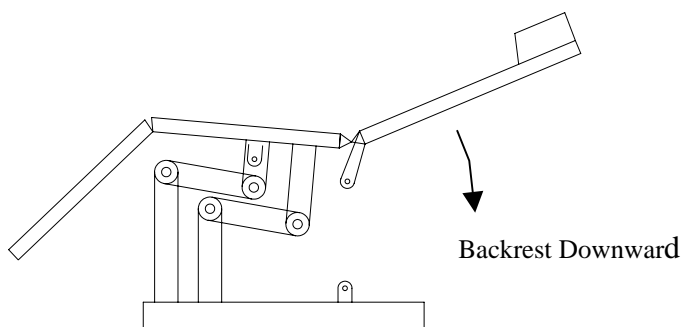
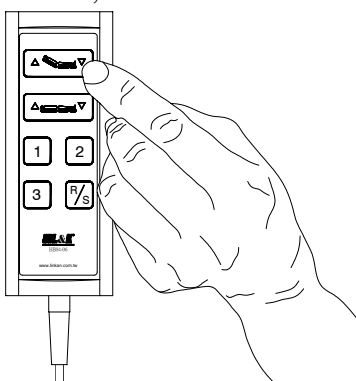
### 4.1. UP Button of Backrest :

Press, Upward / Release, Stop.



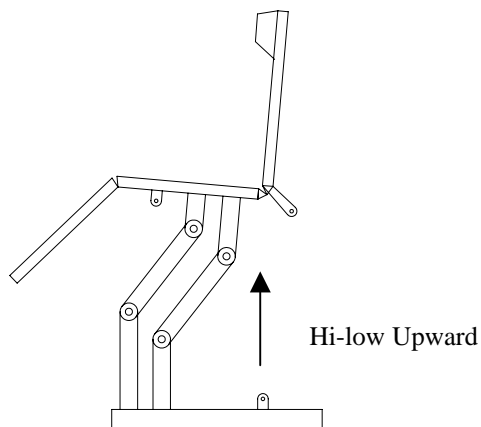
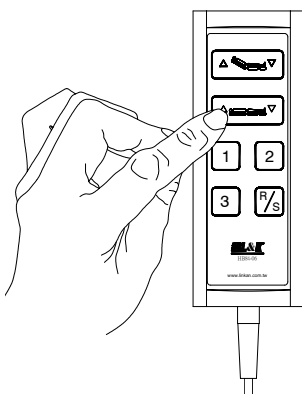
### 4.2. DOWN Button of Backrest :

Press, Downward / Release, Stop.



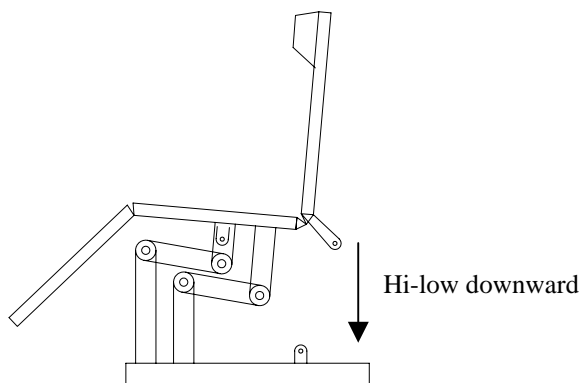
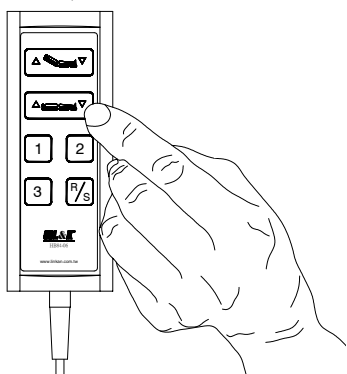
### 4.3. UP Button of Hi-Low :

Press, Upward / Release, Stop.



### 4.4. DOWN Button of Hi-low :

Press, Downward / Release, Stop.



#### 4.5. R/S Button :

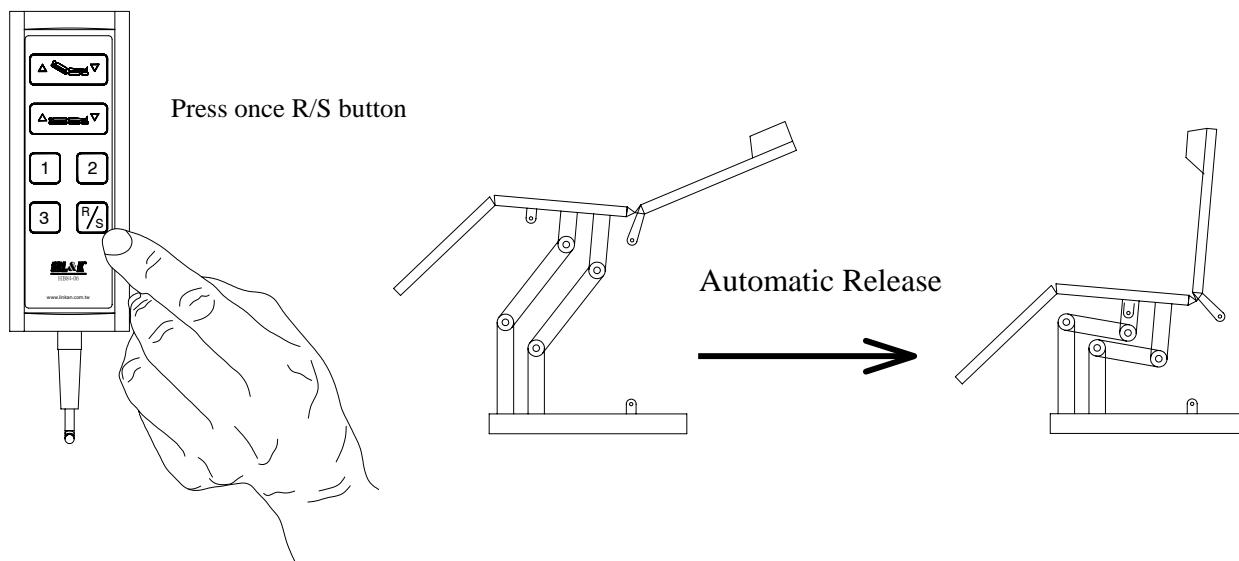
There is few difference on the R/S button operation between CB05.2A and CB05.2B. The following will distinguish its operation seperately.

### 5. CB05.2A

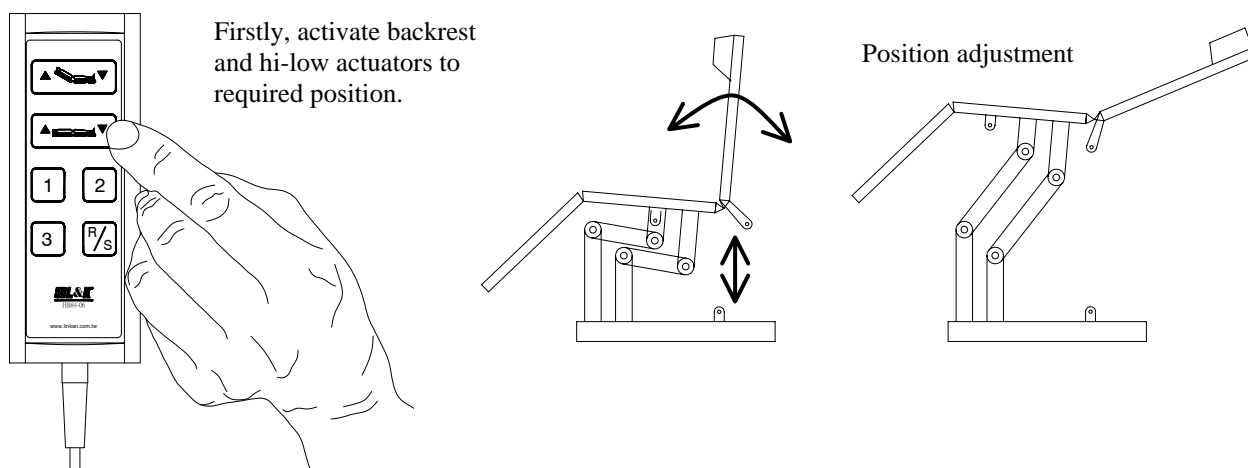
- (I) Press Once R/S Button. The backrest actuator will move to the highest position and Hi-Low one will move downward to lowest position. This is automatic “Release” function as long as R/S button is pressed once. For interrupting, just press any button on the handset.
- (II) Press R/S button for 3 seconds. Control box will make audio sound ‘Bi’ once. It indicates the system enters setting status. Under this status, any memory position button (1 or 2 or 3) can be pressed to set the position. When setting is finished, the control box will make 3 times of audio sound. This indicates the setting status is over. This memory position is taken as permanent one, which will not be lost due to no power supply.
- (III) When entering setting status, if no memory position is pressed within 5 seconds, control box will make 3 times of audio sound. This indicates the setting status is automatically over.

## 6. CB05.2A Memory function operation :

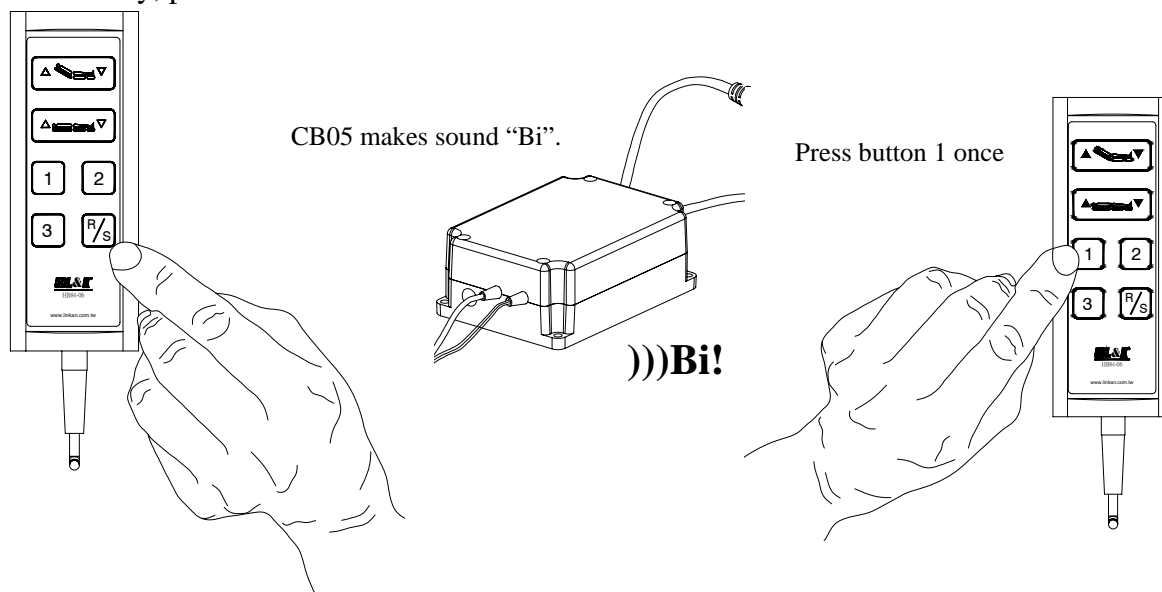
### 1. Automatic Release function:



### 2. Memory position function:



### 3. Secondly, press R/S button for 3 seconds.





## 10 Frequent Questions

### Faults and Possible Causes and Solutions

Q1: No movement. The power indicator light of control box is off

- A : 1.The power cable is loose or inner cable is broken  
2. Fuse is blown  
3. Transformer is burnt  
4. Circuit is broken down

Q2: No Movement. The power indicator light of control box is on

- A : 1.Handset does not plug in well  
2.Handset is broken  
3.Circuit inside the control box is broken

Q3: No movement. But power indicator light of control box is on and makes Relay sound

- A : 1.The power cable of actuator does not plug in well  
2. Circuit in the control box is broken  
3. The power cable of actuator is broken  
4. Actuator is broken

Q4: Some Movement. But actuator movement is not normal, for example, only upward but not downward; or move irregular

- A : 1.Handset is broken  
2.Circuit in the control box is broken  
3. Actuator is blown

Q5: Control box with battery can activate actuator with mains power supply but no movement when power is off. That is, battery cannot activate the actuator.

- A : 1.Battery has no electricity  
2.Battery is broken  
3. Circuit in the control box is broken  
4. Fuse in the battery is broken

Q6: LA31.4BM or LA32.4BM actuator can be lowered, but motor rotate freely when upward

- A: 1. Safety Nut device is broken.

Q7: LA31.B or LA32.B actuator can move upward and downward. But It will slide down when lifting upward.

- A : 1.Brake spring is broken  
2.Motor is broken

Q8: Actuator only move upward, not downward or only downward, not upward

- A : E N D S T O P device is broken

Q9: When using LA31R or LA32R with CB05, Actuator will move only in a while then stop

- A : 1.Reed Switch is broken  
2.Control box is broken

# CE CERTIFICATE

## WE HEREBY CERTIFY THAT:

Certificate No.: R04081604E

### EQUIPMENT:

Linear Actuator

### Model No.:

LA3X(0~9)

### Serial No.:

CB0X(0~9); CB1X(0~9); CB2X(0~9); HB8X(0~5); HB3X(0~5); ACPX(0~5)

### Applicant:

LINKAN ASIA CO.

5F, NO.78, SEC. 1, KWANG FU RD., SAN-CHUNG CITY,  
TAIPEI HSIEN TAIWAN R.O.C.

**IS IN COMPLIANCE TO THE EUROPEAN COUNCIL DIRECTIVE 89/336/EEC  
AS AMENDED BY DIRECTIVES 92/31/EEC AND 93/68/EEC WITHIN CE MARKING  
REQUIREMENT.**

**AND KEEPS ALL REQUIREMENTS ACCORDING THE FOLLOWING REGULATIONS**

EN 55011:1998: Class B	EN 61000-3-2:2001	EN 61000-3-3:2001
EN 60601-1-2 : 2001	EN 61000-4-2:1995	EN 61000-4-3:2002
	EN 61000-4-4:1995	EN 61000-4-5:1995
	EN 61000-4-6:1996	EN 61000-4-11:1994

Taiwan  
Aug. 31, 2004



Matrix Test Laboratory  
2F, No. 146, Jianyi Rd.,  
Janghe City, Taipei, Taiwan



Peter Chin, Managing Director

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## مهندسی فراسیس

**L&K** نماینده انحصاری محصولات

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پلاک ۵، طبقه ۳، واحد ۶

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